

VIDEO SESSION - CASE REPORTS

## Left Ventricular Mass One Year After Radiofrequency Ablation for Atrial Fibrillation

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### INTRODUCTION

Radiofrequency ablation (RFA) of the pulmonary veins is an effective and widely used therapy for symptomatic patients with atrial fibrillation.<sup>1</sup> The reported complication rate after RFA is 3.9% to 22%<sup>2</sup> and the mortality rate is 2% to 4%<sup>3</sup> among all patients. We report a case in which a cardiac myxoma arose in a patient's apical interventricular septum of his left ventricle after RFA.

### KEY WORDS:

### CASE PRESENTATION

A 65-year-old Caucasian man with a history of hypertension and paroxysmal atrial fibrillation (PAF) was admitted to our hospital. On admission patient's heart rhythm was irregular (135 bpm) and his blood pressure was 130/68 mmHg. A 12-lead electrocardiogram revealed atrial fibrillation.

A two-dimensional transthoracic echocardiography (TTE) was performed, which showed a large, pedunculated, mobile mass sized 15×18 mm located at the apical interventricular septum of the left ventricle, with a normally contracting adjacent myocardium (Figure 1a, b). Left ventricular systolic function and the morphology and function of cardiac valves were normal. Further evaluation with cardiac computed tomography (CT) confirmed the presence of a nodular pedunculated mass (14×10

### ABBREVIATIONS

CT = computed tomography  
PAF = paroxysmal atrial fibrillation  
RFA = radiofrequency ablation  
TTE = transthoracic echocardiography

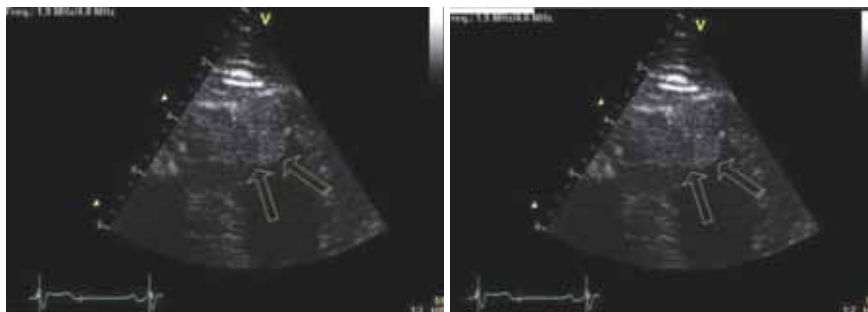


FIGURE 1. Transthoracic echocardiography apical two-chamber view in (a) systole and (b) diastole. A large pedunculated mass at the apical interventricular septum is seen (arrows).

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mm) with radiographic evidence of myxoma (Figure 2a, b). No signs of peripheral embolic events were detected.

Interestingly, one year earlier the patient had undergone a radiofrequency ablation (RFA) procedure for pulmonary vein isolation for PAF. RFA was performed with use of the transeptal technique; mapping of pulmonary veins was performed with a circumferential mapping catheter guided by a magnetic-based 3-dimensional (3D) mapping system

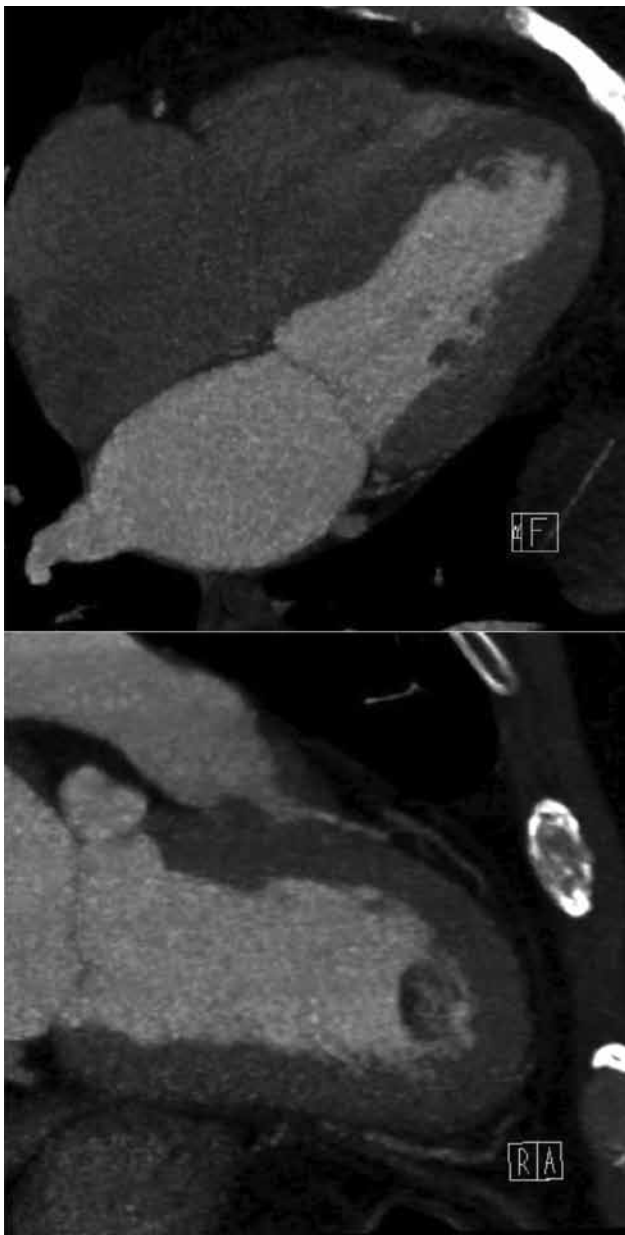


FIGURE 2. CT (a) 2-chamber and (b) 4-chamber axial view images revealing a nodular mass at the apical interventricular septum of the left ventricle. F: Foot, R: Right, A: Apex.

(CARTO®, Biosense-Webster; Israel). Radiofrequency ablation was performed until complete isolation of the pulmonary veins from the left atrium was achieved. The procedure was completed without clinically relevant sequelae. TTE and chest CT performed prior to and following the ablation procedure did not demonstrate any left ventricular mass (Figures 3a, b and 4a, b).

Since the onset of symptoms was 3 hours prior to admission, patient was hemodynamically stable and on warfarin with prothrombin time in therapeutic levels, we proceeded and successfully converted atrial fibrillation to sinus rhythm with intravenous amiodarone. The patient was subsequently scheduled for urgent cardiac surgery. Under cardiopulmonary bypass, a left apical 2.5 cm longitudinal ventriculotomy was performed, which exposed the mass in full view (Figure 5). The defect was closed in a linear fashion and reinforced with felt strips. A histopathology examination demonstrated the typical features of a myxoma (Figure 6).

Following the resection of the myxoma and over 20 months

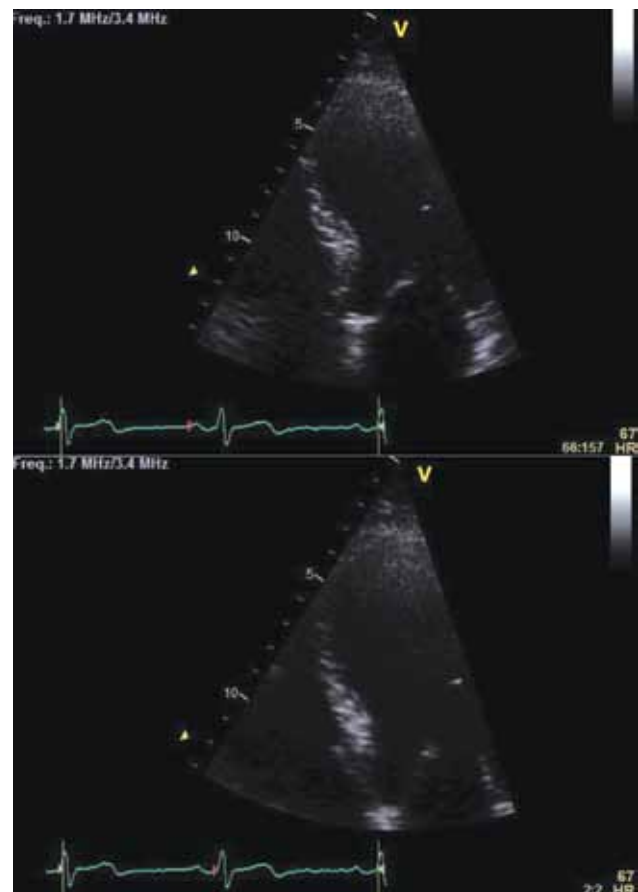


FIGURE 3. Transthoracic echocardiography apical two-chamber view in (a) systole and (b) diastole. 12 months earlier no mass is seen in this view.



FIGURE 4. CT (a) 2-chamber and (b) 4-chamber axial view images performed 12 months prior to clinical attendance. No mass is seen. F: Foot, R: Right, A: Apex

of follow-up, repeat echocardiographic and CT examinations have not shown any evidence of tumor recurrence. Interestingly the patient has also been free of any PAF episodes.

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#### DISCUSSION

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Left ventricular myxomas are more common in women and may arise from any region of the left ventricle, in contrast to atrial myxomas, which usually originate from the interatrial septum. Whereas atrial myxomas are usually associated with symptoms and signs of systemic illness, such as weight loss, fatigue, fever, anemia, and leukocytosis,<sup>4</sup> these symptoms and signs are usually not observed in patients with ventricular

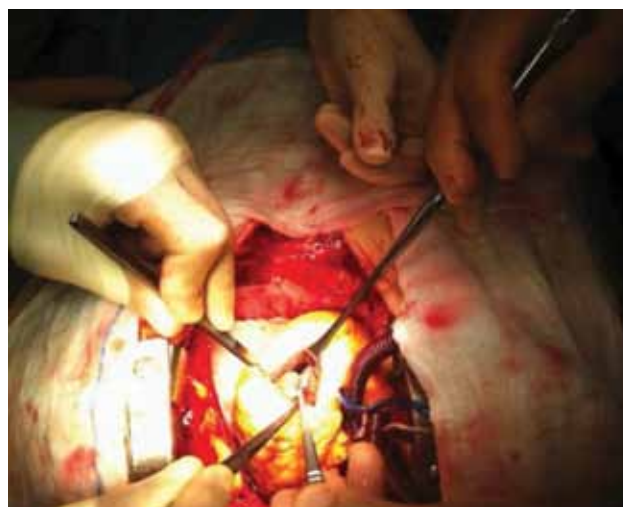


FIGURE 5. Intraoperative photo showing the mass through an apical left ventriculotomy.

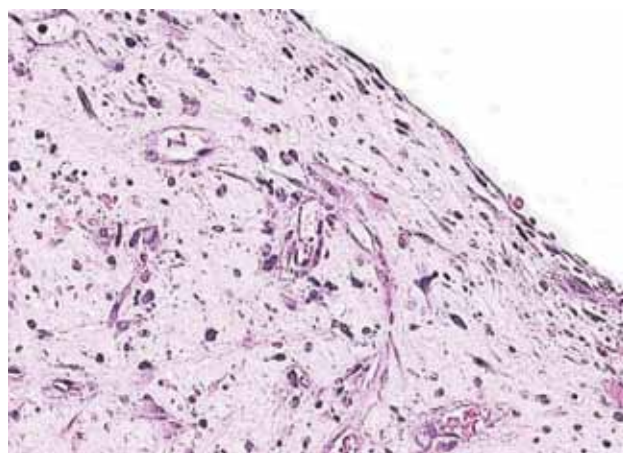


FIGURE 6. Histopathology of the excised mass shows myxoid stroma containing single and small groups of lepidic cells and a few small vessels.

myxomas. Although the number of asymptomatic cardiac tumors being detected has increased due to the widespread use of echocardiography, left ventricular myxomas are still rare and the diagnosis is often preceded by syncope caused by left ventricular outflow tract obstruction or systemic embolization.

The exact etiology of myxomas is unknown and most cases are sporadic. Familial atrial myxomas have an autosomal-dominant transmission, but these account for <10% of the total number of myxomas. Although familial myxomas may be transmitted without any associated disorders, they may present as a component of a Carney complex, an autosomal-dominant condition comprising myxomas at various sites, endocrine tumors, and spotty pigmentation of the skin. It is well accepted

that myxomas can develop after cardiac trauma including the repair of atrial septal defects and transseptal puncture for dilation of the mitral valve.<sup>5</sup>

Radiofrequency ablation necessarily produces an area of myocardial necrosis. Several biochemical markers have been used for the diagnosis of RFA-induced myocardial damage.<sup>6</sup> The appearance of an atrial myxoma after RFA has, to our knowledge, been previously reported only once in the literature.<sup>7</sup>

In our patient the development of the myxoma was in a position that can not be associated with the RFA procedure per se and its discovery seems to be a coincidence. A very interesting observation in this case report is the amelioration of PAF episodes after the resection of the myxoma. A possible explanation of this finding may be based on the activation of neurohormones and cytokine overexpression from the tumor. Further observations are needed in order to establish this relationship.

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