Left Atrial Myxomectomy with Intraoperative Severe Mitral Regurgitation and Complicated Postoperative Course – Case Report

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ABSTRACT: Primary cardiac tumors are a rare occurrence with myxomas accounting for about half of the benign tumors. Once diagnosed, surgical resection is the standard of care. Our case describes a female in her 50s who underwent a myxoma resection under cardiopulmonary bypass via biatrial approach. Intraoperatively, the thin septal crux between the wall of the aorta and mitral valve was damaged during resection, requiring stem cell tissue matrix for repair. The patient also developed severe mitral regurgitation suggesting infarct to the left coronary system during resection, subsequently receiving a mechanical mitral valve and a saphenous vein bypass graft. Postoperatively, she developed atrial fibrillation with a left atrial appendage thrombus, heart failure with an ejection fraction of 30%–35%, and a transient ischemic attack. In conclusion, it is important for the clinician to appreciate the possible complications of resection peri and postoperatively.

KEYWORDS: myxomectomy, CorMatrix, mitral regurgitation, left atrial myxoma, myxoma, stem cell, tissue matrix

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Introduction

Cardiac myxomas (CM) are a rare occurrence with myxomas accounting for about half of the benign tumors.[1] Presentation usually includes either symptoms of flow obstruction, systemic symptoms such as fever and fatigue, or signs and symptoms of embolism, although it may be heralded by an acute myocardial infarction.[2,3] Once diagnosed, surgical resection is the standard of care, preventing possible sudden cardiac death or a major embolic event.[1] Postoperative outcomes of resection carry an excellent prognosis; however, there have been documented complications, most commonly arrhythmias, and also thromboembolic events.[1]

Case Report

A previously active female in her 50s with a history of chronic obstructive pulmonary disease secondary to smoking began to experience progressive worsening fatigue and two episodes of syncope over the course of 4 months. Her syncopal episodes occurred spontaneously without exertion or warning at work. Her primary care provider initiated workup including treadmill stress test and echocardiography; however, upon transthoracic echocardiography, a 4.9×3.5 cm^2 left atrial mass occupying nearly 90% of her left atrium was seen (Supplementary File 1), and the patient was referred urgently to cardiology. Examination at that time revealed normal vital signs and an unremarkable physical examination with a blood pressure of 115/68 and a pulse of 72. Electrocardiogram showed normal sinus rhythm with nonspecific ST segment changes. Four days later, she underwent a diagnostic coronary angiogram, which revealed single-vessel disease with 70% diagonal branch stenosis off the left anterior descending coronary artery (LAD). Left ventricular ejection fraction was seen to be 60%. Soon thereafter, our patient underwent myxoma resection under cardiopulmonary bypass (CPB) via biatrial approach. Unfortunately, the mass was too large, and the thin septal crux between the wall of the aorta and mitral valve was damaged during resection, requiring stem cell tissue matrix (CorMatrix) for repair. Upon coming off of CPB, severe mitral regurgitation and a sluggish anterior wall suggesting infarct to the left coronary system during resection were seen. Subsequently, she was put back on CPB and received a mechanical mitral valve replacement and a saphenous vein graft to the LAD. Upon pathologic examination, the patient's myxoma measured $5.5 \times 4.5 \times 3.5$ cm^3 and weighed 52 g (Fig. 1). Postoperatively she developed atrial fibrillation with a left atrial appendage thrombus, New York Heart Association Class II–III heart failure with a LVEF of 30%–35%, and a transient ischemic attack (TIA).

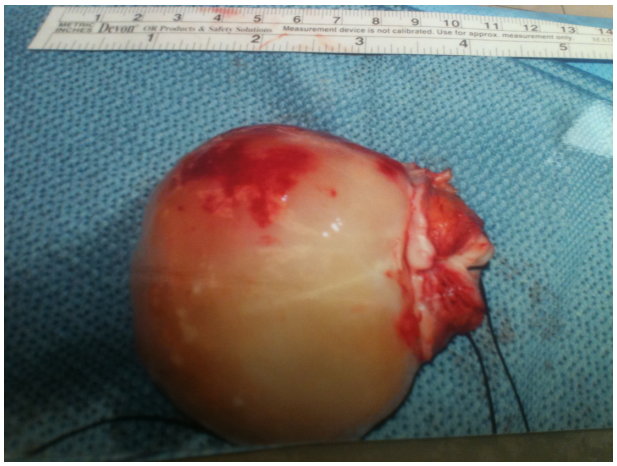

Figure 1. A large spherical mass measuring 5.5 × 4.5 × 3.5 cm and weighing 52 g nearly occupying the entire left atrium.

Discussion

Although a rare disease, it is important to swiftly recognize, diagnose, and treat CM to prevent morbid or fatal outcomes. However, as our case describes, the surgical treatment of CM may be complicated as a result of CM manipulation, leading to embolization into the left coronary circulation causing ischemic injury to the papillary muscles. Although there is no literature demonstrating intraoperative embolization, CM are friable and have been shown to cause ischemic injury from embolism.[1–3] Furthermore, the postoperative course may also be complicated, leading to significant comorbidity such as atrial fibrillation, heart failure, and TIA/stroke.

Majority of CM are pedunculated, round, and may be lobulated; some may have soft, gelatinous villous extensions or blood clots, which are prone to embolization.[2,3] Histologically, CM are mainly comprised of stellate, fusiform, or polygonal cells with rare mitosis encompassed in a myxoid matrix of elastin, collagen, fibrinogen, and fibrin.[2,3] While the patient's myxoma was 5.5 × 4.5 cm^2 in maximum diameter, reports have shown that CM range from 2 to 9.5 cm.[4]

Early echocardiography is vital for the diagnosis of a cardiac mass,[1] with further computerized tomography or magnetic resonance imaging as necessary for better imaging and ruling out metastatic malignant disease.[4] Once identified however, myxomectomy is the standard of care.[1] Nevertheless, with massive myxomas, it is important for the clinician to appreciate the possible complications of resection peri and postoperatively. Our case highlights the potential complications of such a surgery. It showcases the use of novel stem cell matrix for the repair of damaged cardiac tissue and is the first description of ischemic mitral regurgitation, requiring mitral valve replacement and coronary artery bypass grafting during myxomectomy.

Author Contributions

Conceived the report: PH. Wrote the first draft of the manuscript: NM. Contributed to the writing of the manuscript: NM, PH. Agree with manuscript results and conclusions: NM, PH. Made critical revisions and approved final version: NM, PH. Both authors reviewed and approved of the final manuscript.

Supplementary Material

Supplementary File 1. Video file, transthoracic echocardiogram taken upon presentation.

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