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Publicação Oficial da Sociedade Brasileira de Anestesiologia  
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## CLINICAL INFORMATION

# Determination of residual mass in left ventricle by intraoperative transesophageal echocardiography after a giant and floating left atrial myxoma resection

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Received 6 March 2017; accepted 3 October 2017

### KEYWORDS

Giant cardiac tumor;  
Left atrial myxoma;  
Surgical resection;  
Residual mass;  
Transesophageal  
echocardiography

**Abstract** Atrial myxoma is a benign tumor of the heart that occurs primarily in the left atrium. Floating or large left atrial myxomas frequently cause functional mitral stenosis, may also affect mitral valve structure and flow, and lead to mitral regurgitation. Systemic embolization occurs in around 30% of cases either from tumor fragmentation or complete tumor detachment hence it should be removed as soon as it is detected. Intraoperative transesophageal echocardiography has a vital importance in the surgery. After resection of myxoma, intraoperative transesophageal echocardiography must be performed to rule out residual mass. The case here reported is of a 48-year old female, who presented with giant and floating left atrial myxoma. Residue mass was detected with intraoperative transesophageal echocardiography in the left ventricle after the resection of myxoma. Subsequently, the residue mass was successfully removed. Complete resection must be required to prevent possible complications such as recurrence, embolization in atrial myxomas. Transesophageal echocardiography performed intraoperatively is vital importance to confirm that the myxoma is completely resected.

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<https://doi.org/10.1016/j.bjane.2017.10.002>

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Please cite this article in press as: Kavakli AS, Kavrut Ozturk N. Determination of residual mass in left ventricle by intraoperative transesophageal echocardiography after a giant and floating left atrial myxoma resection. Rev Bras Anesthesiol. 2017. <https://doi.org/10.1016/j.bjane.2017.10.002>

## PALAVRAS-CHAVE

Tumor cardíaco gigante;  
Mixoma do átrio esquerdo;  
Ressecção cirúrgica;  
Massa residual;  
Ecocardiografia transesofágica

## Determinação da massa residual em ventrículo esquerdo por ecocardiografia transesofágica intraoperatória após ressecção de mixoma gigante e flutuante em átrio esquerdo

**Resumo** Mixoma atrial é um tumor benigno do coração que ocorre principalmente no átrio esquerdo. Os mixomas flutuantes ou grandes em átrio esquerdo com frequência causam estenose mitral funcional, podendo também afetar a estrutura e o fluxo da válvula mitral e levar à insuficiência mitral. A embolização sistêmica ocorre em cerca de 30% dos casos, quer pela fragmentação do tumor ou pelo desprendimento total do tumor; portanto, o tumor deve ser removido assim que detectado. A ecocardiografia transesofágica intraoperatória tem uma importância vital na cirurgia. Após a ressecção do mixoma, a ecocardiografia transesofágica intraoperatória deve ser feita para excluir a massa residual. O caso aqui relatado é o de uma paciente de 48 anos que apresentou um mixoma de átrio esquerdo gigante e flutuante. A massa residual foi detectada com ecocardiografia transesofágica intraoperatória no ventrículo esquerdo após a ressecção do mixoma. Posteriormente, a massa residual foi removida com sucesso. A ressecção completa é necessária para evitar possíveis complicações, como recorrência e embolização em mixomas atriais. A ecocardiografia transesofágica realizada no intraoperatório é de vital importância para confirmar a ressecção completa do mixoma.

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## Introduction

Myxomas are the most common primary benign neoplasms of the heart and about 75% of them are located in the left atrium. Myxomas are more common among women and frequently occur between the ages of 30–60 years. Their clinical signs and symptoms may be nonspecific. Large left atrial (LA) myxomas frequently cause functional mitral stenosis, but can also lead to mitral regurgitation.<sup>1</sup> Intraoperative transesophageal echocardiography (TEE) is very important in myxoma surgery. TEE can provide useful information for medical management and surgical intervention of intracardiac tumors and intraoperative TEE assessment may result in a change of the surgical plan.<sup>2</sup>

## Case report

A 46 year-old female patient presented to our hospital with fatigue, progressive palpitation and paroxysmal nocturnal dyspnea for two weeks. On examination, blood pressure was 120/80 mmHg, heart rate 90 beats·min<sup>-1</sup>. Cardiac auscultation revealed 2/6 systolic murmur in the apex. Lungs were clear to auscultation. A 12 lead electrocardiogram showed sinus rhythm and left axial deviation. Chest X-ray showed normal cardiothoracic ratio. Laboratory parameters were normal. A coronary angiography showed a normal coronal anatomy. Transthoracic Echocardiogram (TTE) revealed a mass of 52 × 37 mm, attached to the interatrial septum with a pedicle. The mass was floating and prolapsed into the left ventricle through the mitral orifice during diastole, leading to mild mitral regurgitation. Thickening, calcification and restricted motion of the mitral leaflets were not observed by TTE. Surgery was planned to remove the mass.

In the operating room, general anesthesia with 37F left sided of double lumen endotracheal tube for one lung

ventilation in the supine position was administered. Anesthesia was maintained with 50% air and 5–6% desflurane in oxygen with positive pressure ventilation in a circle system.

Transesophageal echocardiography monitoring was set up. An arterial cannula (Fr17, Medtronic, Inc, Minneapolis, MN, USA) was positioned into the right jugular vein. A femoral vein cannula (Fr23, Medtronic, Inc, Minneapolis, MN, USA) and femoral arterial cannula (Fr19, Medtronic, Inc, Minneapolis, MN, USA) were applied in the right groin after heparinization.

After one lung ventilation was initiated, a right anterolateral mini-thoracotomy was performed in the 4th intercostal space. Cardioplegia cannula was applied and aortic clamping was obtained. The heart was arrested with anterograde histidine-tryptophan-ketoglutarate solution (Custodiol Dr Franz Köhler Chemie, Alsbach-Hähnlein, Germany). The mass was reached through an atrial transseptal incision. The mass with its pedicle was resected. The left atriotomy was closed using double-layer continuous prolene 3/0 running sutures. Once the patient was weaned off CPB, a transesophageal echocardiographic control was performed. A moving mass of 15 × 15 mm was detected in the left ventricle ([Supplementary data Video clip 1 and 2](#)). Aortic cross clamping was re-applied and the residual mass removed through ventriculotomy. The absence of another residual mass was confirmed by TEE and mild mitral regurgitation was observed with color Doppler ([Supplementary data Video clip 3, Fig. 1](#)). The bypass was terminated after rewarming of the patient to 36.5 °C. The procedural time was 170 min (skin to skin).

After surgery, the patient was transferred to the intensive care unit (ICU). The postoperative course was uneventful. The patient was transferred from ICU to the cardiovascular surgery ward at the postoperative 24th hour and was discharged from the hospital on the sixth postoperative day.

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