

# Free-floating thrombus in the left atrium

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## SOUHRN

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### Klíčová slova:

Levá síň  
Mitrální stenóza  
Volně vlající trombus

Volně vlající trombus v levé síni je vzácný stav, který se často vyskytuje při onemocnění mitrální chlopně. Dovolujeme si prezentovat případ 82leté pacientky s volně vlajícím trombem v levé síni, který byl náhodně odhalen při předoperačním transezofageálním echokardiografickým vyšetření u pacientky s onemocněním mitrální chlopně a perzistentní fibrilací síní. Pacientka užívala 15 let antikoagulační terapii. Závěrem diskutujeme různé možnosti, které vedly k vzniku trombu.

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## ABSTRACT

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### Keywords:

Free-floating thrombus  
Left atrium  
Mitral stenosis

A free-floating thrombus in the left atrium is a rare condition that usually occurs with mitral valve disease. We present a case of an 82-year-old woman with the free-floating left atrial thrombus which was found incidentally on the preoperative transesophageal echocardiogram in the patient with mitral valve disease and persistent atrial fibrillation. The patient has been on anticoagulation therapy for 15 years. We discuss different possibilities that led to the formation of the thrombus.

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## Introduction

Free-floating thrombus in the left atrium is a condition that usually occurs with mitral valve disease and atrial fibrillation. It has potentially catastrophic consequences such as obstruction of the stenotic mitral valve orifice causing sudden death or systemic embolization. A transesophageal echocardiogram is the most useful diagnostic tool and once the diagnosis is established, surgical removal of the thrombus with the treatment of the underlying cause is mandatory.

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## Case report

An 82-year-old woman with a medical history of rheumatic mitral valve disease, persistent atrial fibrillation, and previous cerebral infarction was admitted to our hospital with progressively increasing dyspnea.

The patient was already diagnosed with severe mitral valve stenosis and moderate mitral regurgitation, severe pulmonary artery hypertension, and moderate tricuspid regurgitation. The patient previously suffered a stroke in 1995 from which she made a full recovery and a peripheral thrombo-embolism in the right leg in 1997. Since then she was treated with dicumarol, digitalis, diuretics, calcium channel blockers, and angiotensin II receptor blockers.

Transthoracic echocardiogram has been done as a part of regular follow-up for mitral valve disease every two years since 1998. The transesophageal echocardiogram performed in July 2018 showed progression of the mitral valve stenosis, normal ejection fraction of left ventricle, spontaneous echo contrast in the gigantic left atrium (LAVi 350.8 cm<sup>3</sup>) with no mention of thrombus neither in atrium nor in appendage, and moderate tricuspid regurgitation. The patient was subsequently indicated for mitral valve replacement, tricuspid valve annuloplasty, and left atrial appendage closure.

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Fig. 1 – Intraoperative finding. After incision of the left atrium, a smooth round thrombus was visualised.

A transesophageal echocardiogram performed at the beginning of surgery in February 2019 showed a round-ball-like mobile thrombus freely floating in the left atrial cavity. During the cardiac cycle, the mass dropped into the mitral orifice, obstructing it temporarily, before bouncing away again towards the posterior left atrial wall (Video 1, 2 <http://www.cksonline.cz/coretvasa-case-reports/clanky.php?p=detail&id=156&pid=1669&file=1146>, <http://www.cksonline.cz/coretvasa-case-reports/clanky.php?p=detail&id=156&pid=1669&file=1145>). Fortunately, the size of the mass and the mitral valve stenosis seemed to prevent it from systolic embolization. At surgery, a smooth round thrombus (Fig. 1 <http://www.cksonline.cz/coretvasa-case-reports/clanky.php?p=detail&id=156&pid=1669&file=1143>). was removed and the patient had a mitral valve replacement with the biological prosthesis, DeVega annuloplasty of the tricuspid valve, and left atrial appendage closure. Anticoagulation was resumed the first postoperative day and the patient was discharged after stabilizing the anticoagulation dosage.

## Pathology

The thrombus measured 37 mm and weighed 30 g (Fig. 2 <http://www.cksonline.cz/coretvasa-case-reports/clanky.php?p=detail&id=156&pid=1669&file=1144>). It was yellow-



Fig. 2. – The thrombus outside of the left atrium.

pinkish colored, soft in consistency with noticeable layering and scarring tendency. Histologically, it was described as a round encapsulated thrombus with layers of thrombotic substances inside and with the signs of organization and seldom epithelization of endothelial cells on the outside. Immunohistochemical verification using antibody calretinin was negative, which ruled out the diagnosis of myxoma.

## Discussion

We present a case of a free-floating left atrial thrombus that was found incidentally on the preoperative transesophageal echocardiogram in a patient with severe mitral valve stenosis, moderate mitral valve regurgitation, and persistent atrial fibrillation. The patient was anticoagulated with dicumarol since suffering a stroke and a peripheral thrombo-embolism in the right leg 15 years ago. This suggests the previous presence of thrombi in the left atrium and since the mitral valve disease wasn't severe enough at that time, embolic manifestations could have easily occurred. This time, anticoagulant therapy might have been insufficient which caused the formation of the thrombus in the relatively short period of six months between the last transesophageal echocardiogram as a part of regular follow-up without the presence of the thrombus and our preoperative transesophageal echocardiogram where the massive thrombus was freely floating in the left atrial cavity.

Hewitt formulated two criteria for the diagnosis of a free ball thrombus: the thrombus must be larger than the orifice of the valve, and it must have a smooth surface with no signs of attachment to the atrial wall.<sup>1</sup> At the beginning of its formation, the thrombus was either mural micro thrombus, or it was pedunculated and it later lost the attachment to the atrial wall because of the constant motion. The other hypothesis is that it was an initial free-floating thrombus where the stenotic mitral valve didn't allow it to enter its orifice with an accretion phenomenon gradually enlarging the mass like a growing snowball in the background of chronic stasis associated with atrial fibrillation.<sup>2</sup> Its formation usually starts in the left atrial appendage or the left atrial posterior wall. The thrombus comes from fresh clots covered concentrically by a smooth fibrinous layer which together with the incomplete emptying of the left atrium and the blood's tendency for rotary motion prevents it from systemic embolization.<sup>3</sup> Such large thrombi are unlikely to be dissolved with anticoagulation and therefore the first choice of treatment is its surgical removal.

## Conflict of interest

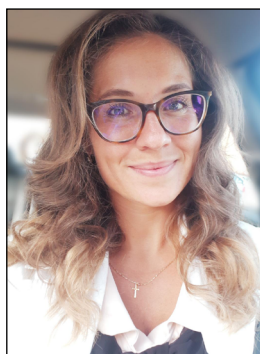
None declared.

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## CURRICULUM VITAE

**MUDr. Sandra Rečičárová, MBA**, graduated from Faculty of Medicine at University of Pavol Jozef Šafárik in 2018. She is currently practicing in the Department of Cardiovascular Surgery at the Institute of Clinical and Experimental Medicine in Prague. She began her Ph.D. studies in experimental surgery at Charles University in 2020.