©Copyright by Croatian Cardiac Society. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/) which permits users to read, download, copy, distribute, print, search, or link to the full texts of these articles in any medium or format and to remix, transform and build upon the material, provided the original work is properly cited and any changes properly indicated.

Three-dimensional transthoracic echocardiography in the preoperative assessment of a large left atrial tumor

Anto Stažić[1,2]*, Željka Breškić Ćurić[1], Matija Drinković[1], Kristina Selthofer-Relatić[1]

[1]University Hospital Centre Osijek, Osijek, Croatia
[2]Josip Juraj Strossmayer University of Osijek, Faculty of Medicine Osijek, Osijek, Croatia

KEYWORDS: three-dimensional echocardiography, cardiac tumor, mitral valve obstruction.

CITATION: Cardiol Croat. 2026;21(11-12):304-5. | https://doi.org/10.15836/ccar2026.304

***ADDRESS FOR CORRESPONDENCE:** Anto Stažić, Klinički bolnički centar Osijek, J. Huttlera 4, HR-31000 Osijek, Croatia. / Phone: +385953877276 / E-mail: anto.stazic1@gmail.com

ORCID: Anto Stažić, https://orcid.org/0000-0002-4429-8297 • Željka Breškić Ćurić, https://orcid.org/0000-0002-6077-4329 Matija Drinković, https://orcid.org/0009-0002-5442-3247 • Kristina Selthofer-Relatić, https://orcid.org/0000-0002-9890-6489

Introduction: Myxoma is the most common benign cardiac tumor, most frequently arising in the left atrium, and requires timely diagnosis due to the risk of potentially serious cardiovascular complications. Three-dimensional echocardiography (3D TTE) provides spatial visualization of cardiac structures and intracardiac masses, offering a more detailed assessment of their morphology, size, location, and relationship to adjacent anatomical structures. This may play an important role in preoperative assessment and surgical planning.[1,2]

Case report: 65-year-old woman was admitted with dyspnea and exercise intolerance lasting eight months. Her medical history included hyperlipidemia and hypothyroidism. Physical examination was unremarkable. Laboratory investigations revealed an NT-proBNP level of 587 ng/L. 3D TTE revealed a heterogeneous mass in the left atrium, measuring approximately 72 × 44 mm (**Figure 1**). The mass was attached to the interatrial septum (**Figure 2**) and prolapsed through the mitral valve (**Figure 3**), resulting in the obstruction (**Figure 4**). Hemodynamic assessment demonstrated a mean transmitral pressure gradient of 20.56 mmHg, a mitral valve area calculated using the velocity–time integral (VTI) of 0.83 cm², and a pressure half-time (PHT) of 73 ms, consistent with severe functional mitral obstruction. Biventricular systolic function was preserved. The left atrium was severely dilated (left atrial volume index [LAVI] 77 mL/m²), while the right atrium was mildly dilated. Moderate functional tricuspid regurgitation and indirect echocardiographic signs of pulmonary hypertension were also present. Coronary angiography excluded obstructive coronary artery disease. The patient was transferred to the Department of Cardiac Surgery and surgical excision of the left atrial tumor (**Figure 5**) was performed. The resected specimen was submitted for histopathological examination, which confirmed the diagnosis of cardiac myxoma. Follow-up echocardiography showed no tumor mass in the left atrium. At follow-up, the patient was asymptomatic.

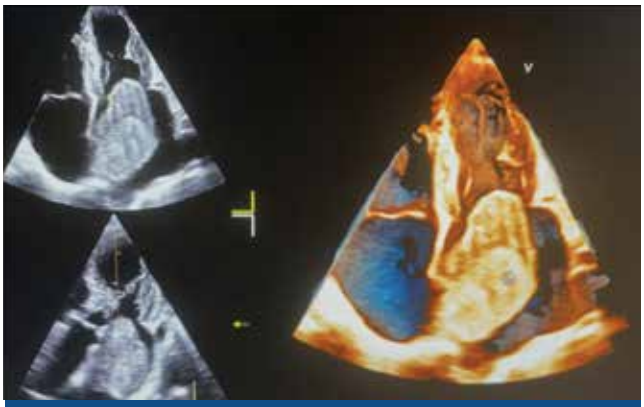


FIGURE 1. A left atrial tumor mass.

RECEIVED:
October 23, 2026
UPDATED:
November 4, 2026

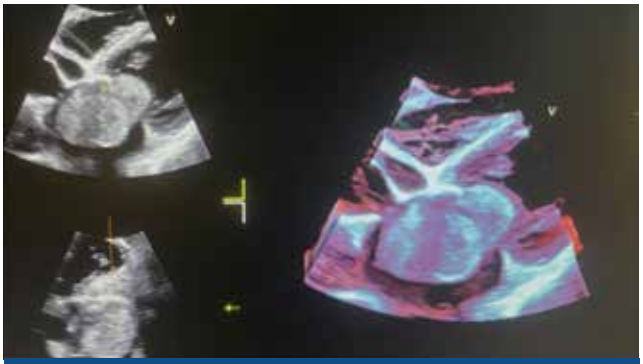


FIGURE 2. The mass was attached to the interatrial septum.

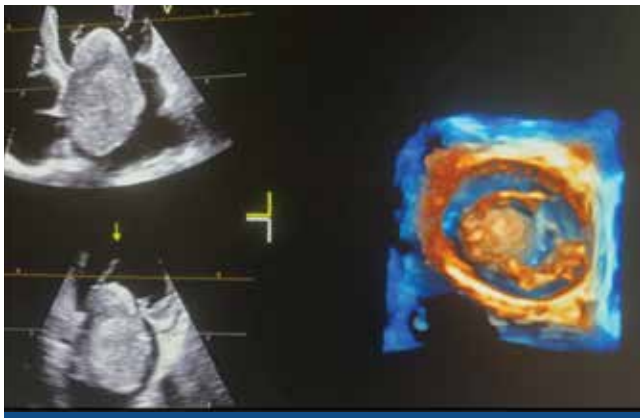


FIGURE 3. The large tumor mass prolapsed through the mitral valve during diastole.

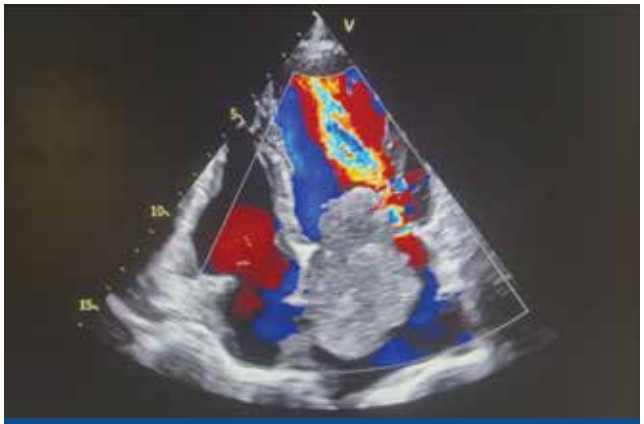


FIGURE 4. Color Doppler demonstrated obstruction of transmitral inflow.



FIGURE 5. Cardiac tumor removed from the left atrium.

Conclusion: 3D TTE provided a comprehensive assessment of the left atrial tumor mass, enabling detailed visualization of its size, attachment to the interatrial septum, and dynamic prolapse through the mitral valve, resulting in significant transmitral flow obstruction. These findings highlight the clinical value of 3D TTE in the preoperative evaluation and surgical planning of intracardiac masses. Transesophageal echocardiography (TEE) remains a valuable complementary modality when transthoracic imaging is inadequate or further anatomical clarification is required.

LITERATURE

1. Islam AKMM. Cardiac myxomas: A narrative review. World J Cardiol. 2022 Apr 26;14(4):206-219. https://doi.org/10.4330/wjc.v14.i4.206
2. Alamro B, Pergola V, Eltayeb A, Alshammari A, Kholaif N, Alhamshari A, et al. Role of three-dimensional transesophageal echocardiography in cardiac myxomas: an imaging challenge. Monaldi Arch Chest Dis. 2023 Sep 19;94(3). https://doi.org/10.4081/monaldi.2023.2768