## Three-dimensional echocardiographic diagnosis of intracardiac masses

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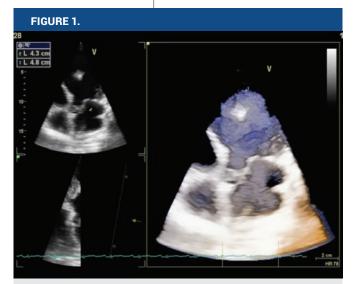
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Echocardiography is a fundamentally important procedure for the evaluation of intracardiac masses, and can reliably identify mass location, shape size, attachment and mobility. Intracardiac masses can easily be detected by transesophageal echocardiography (TEE). Detection of intracardiac masses often represents a difficulty for transthoracic echocardiography (TTE) due to its smaller dimension or location in the left atrial appendage or the right



Three-dimensional TTE showing a large left ventricle thrombus.



Three-dimensional TTE showing a rihgt ventricle thrombus.

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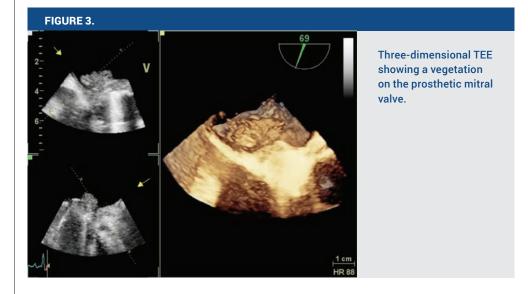


atrium that cannot be adequately analysed by this technique. Diagnostic problems also occur in same patients with a poor "echo window" and in patients on mechanical ventilatory support. Echocardiography can usually distinguish between the three principal intracardiac masses: thrombus, tumor and vegetation. Three-dimensional (3D) echocardiography provides better understanding and assessment of intracardial masses than 2D echocardiography, improves the diagnostic capabilities of cardiac echocardiography in the assessment of the location, composition, size, and relationship to adjacent structures of intracardiac masses.<sup>14</sup>

Imaging plays a pivotal role in the diagnosis and surgical planning of cardiac masses treatment. Clinical features, such as patient age, location, and imaging characteristics of the mass will determine the likely differential diagnosis. Thrombi are formed within heart chambers due to trauma, endocarditis, myocardial infarction, dilated cardiomyopathy, mitral stenosis and atrial fibrillation, polycythaemia, thrombocytosis and systemic lupus erythematosus. Thrombi are more commonly found in left-sided heart chambers than in the right (**Figure 1** and **Figure 2**). Cardiac tumors are found in 0.001% to 0.28% of cases in pathoanatomic studies. Primary tumors are far less common than metastatic tumors in the heart, and benign primary cardiac tumors occur more frequently. Approximately 75% of cardiac tumors are benign, and the most common cardiac tumor is the myxoma. Myxomas are found in the atria in 90% of cases, three times more commonly in LA than in RA. Vegetations can be found on native or artificial valves

8<sup>th</sup> Croatian Echocardiography Meeting with International Participation Cardiologia Croatica 2015;10(3-4):93. and on the pacemaker or implantable cardioverter defibrillator leads (**Figure 3**). 3D echocardiography has been more commonly used in diagnosis of intracardial masses with much higher specificity than 2D echocardiography. The evaluation of cardiac masses is often a challenge for cardiac imaging techniques. The traditional standby has been 2D echocardiography. Real time 3D echocardiography offers incremental value for the evaluation of intracardiac masses by providing more accurate assessment of the size and shape, their attachment and their mobility in some cases.

We report our experience with 3D TTE and 3D TEE for the assessment of intracardial masses. Three-dimensional echocardiography assessment od intracardial masses is feasible and could provide more valuable information than that obtained with 2D echocardiography. We presented LV and RV thrombus, LAA thrombus, LA myxoma and vegetation on native and prosthetic mitral valve diagnosed by 3D echocardiography.



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