

## CLINICAL VIDEO

### Utility of real-time three-dimensional echocardiography in improved assessment of a mitral valve papillary fibroelastoma

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#### Key Clinical Message

Primary cardiac tumors are exceedingly rare. They are usually first identified by transthoracic echocardiography. However, transesophageal echocardiography (TEE), with the aid of real-time three-dimensional (3D) imaging, can provide additional important mass characteristics. We present a case that demonstrates the usefulness of 3D TEE in characterizing a papillary fibroelastoma.

#### Keywords

Mitral valve, three-dimensional, transesophageal echocardiography.

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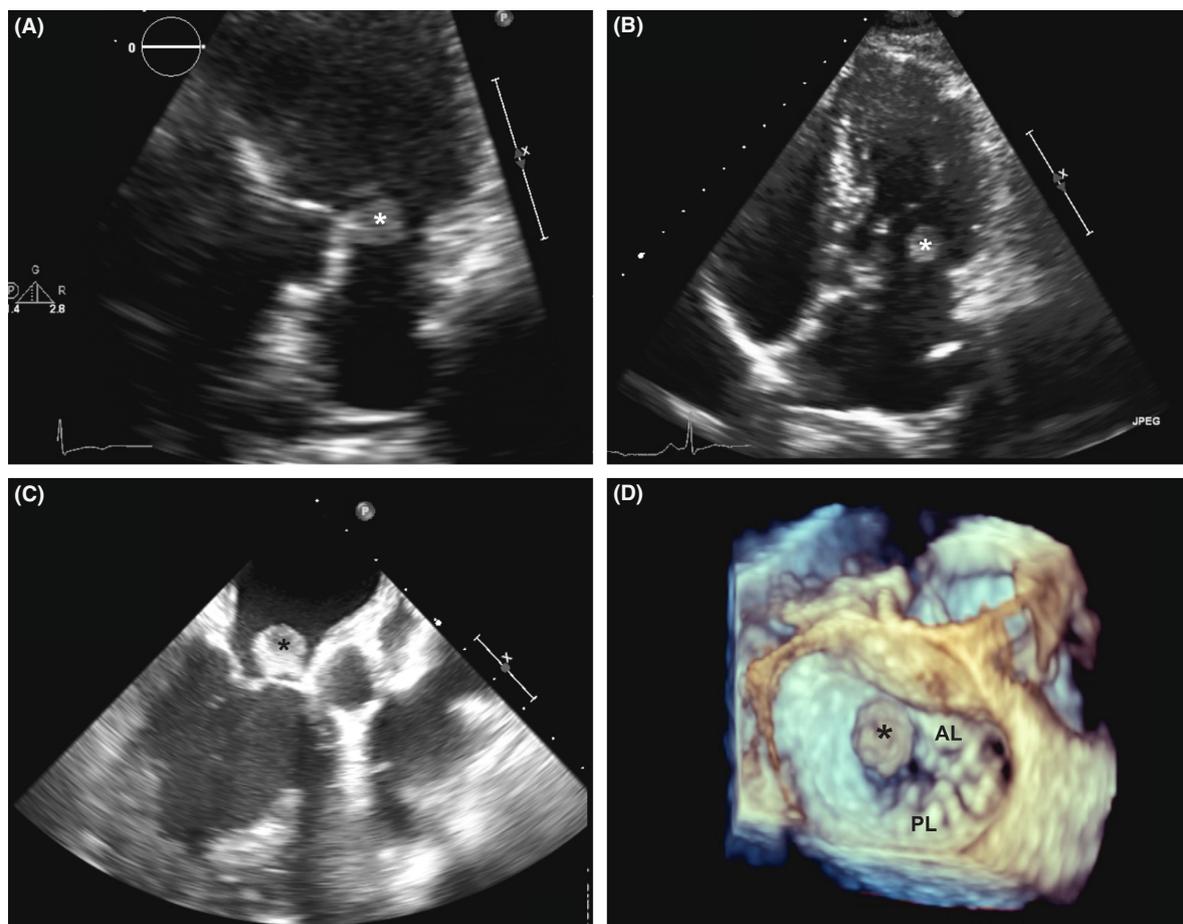
The differential diagnosis for intracardiac masses includes tumor, thrombus, or vegetation. Echocardiography helps narrow the diagnosis and aids surgical planning by identifying the attachment point [1]. A 55-year-old woman presented with dyspnea. A transthoracic echocardiogram showed two masses associated with the mitral valve. However, transesophageal echocardiography (TEE) demonstrated only one mitral valve mass (Fig. 1). Real-time three-dimensional imaging with multiplanar reconstruction (Video S1) added to the two-dimensional images by defining the attachment point on the anterior leaflet of the mitral valve leading to the diagnosis of a primary cardiac tumor. Following excision, histological evaluation confirmed the diagnosis of papillary fibroelastoma (Fig. 2).

#### Authorship

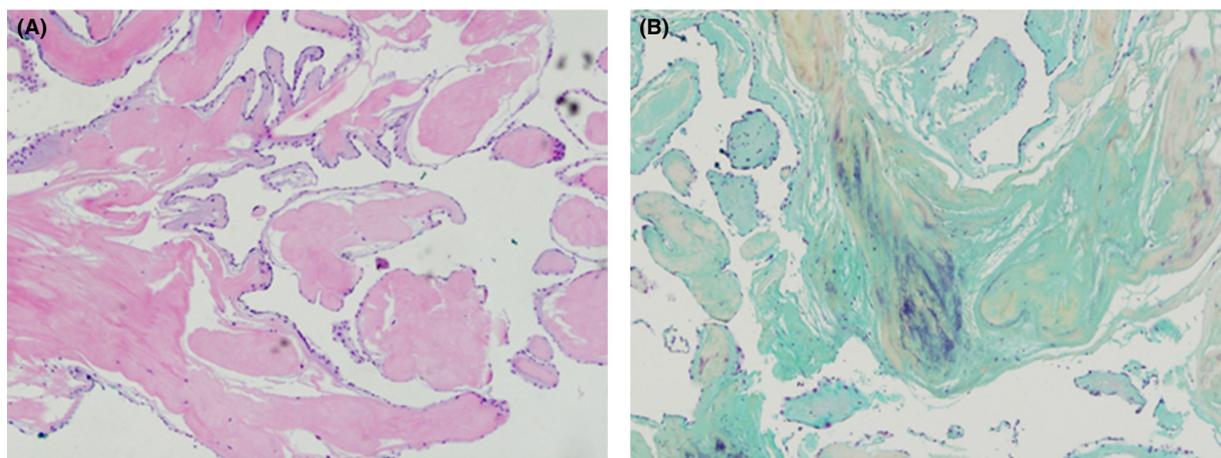
RS: wrote the first draft of the manuscript, and all authors revised it critically and approved the final version to be published. GAA: performed operation to remove mitral valve mass. PB: performed histopathological evaluation of the tumor. TAS, SV, and RB: involved in the preoperative clinical care of the patient and echocardiography interpretation.

#### Conflict of Interest

None declared.



**Figure 1.** Transthoracic echocardiography apical images of what appear to be two distinct mitral valve masses (white asterisks), with one associated with the anterior leaflet (A) and one associated with the posterior leaflet (B). (C) Transesophageal echocardiography midesophageal long-axis view showing only one well circumscribed mass measuring  $1.5 \times 1.2$  cm (black asterisk) associated with the anterior leaflet of the mitral valve. (D) Three-dimensional TEE image of the mitral valve mass (asterisk) in relation to the anterior (AL) and posterior (PL) leaflets of the mitral valve, as seen from a surgeon's view from inside the left atrium.



**Figure 2.** Routine histopathologic section of lesion (A) demonstrates papillary "fronds" with central avascular, acellular core covered by endothelium, typical of a PFE. Movat's stain (B) shows the central core consists large of collagen (yellow) and collagenous ground substance (also known as "myxoid stroma"); the elastin component stains black. ( $\times 100$ , A and B).

## Reference

1. Müller, S., G. Feuchtner, J. Bonatti, L. Müller, G. Laufer, R. Hiemetzberger, et al. 2008. Value of transesophageal 3D echocardiography as an adjunct to conventional 2D imaging in preoperative evaluation of cardiac masses. *Echocardiography* 25:624–631.

## Supporting Information

Additional Supporting Information may be found online in the supporting information tab for this article:

**Video S1.** Three-dimensional TEE data set in real time, with 2D multiplanar reconstruction in the three-chamber view (left upper), two-chamber view (right upper), and short-axis view (left lower) of the 3D image (right lower), clearly delineating the spatial orientation and attachment of the mass to the anterior leaflet.