

## EUS-guided biopsy of an intraventricular mass in a patient with ventricular tachycardia



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Endoscopic ultrasound-guided fine-needle biopsy (EUS-FNB) is a minimally invasive procedure commonly used for diagnostic purposes. Because of the accuracy and safety of EUS, both intraluminal and extraluminal lesions can be sampled. Traditional methods of cardiac biopsy, typically through an endovascular approach, are well established. However, few EUS-guided cardiac interventions have been published,<sup>1-3</sup> as they are rarely performed. Potential risks for cardiac biopsy, regardless of modality, include hemorrhage, perforation, arrhythmia, and valvular damage.<sup>4</sup> The precise, real-time anatomic visualization of EUS makes it a viable alternative when traditional methods are not feasible.

The video accompanying this case report demonstrates EUS-guided FNB of an intraventricular mass in a 23-year-old woman (Video 1, available online at [www.giejournal.org](http://www.giejournal.org)).

The patient presented with unstable ventricular tachycardia requiring cardioversion and initiation of antiarrhythmic therapy with temporary return of sinus rhythm. Cardiac magnetic resonance imaging demonstrated a 7- × 7- × 3-cm mass, with vascular involvement concerning for malignancy, invading into the posterior left ventricular wall (Fig. 1). Traditional transvascular cardiac biopsy methods were not feasible because of potential injury of the coronary sinus, and cardiac surgery deemed the mass too large for resection. Ultimately, the heart transplant team was consulted, but, given the lack of tissue diagnosis, a transplant would not be feasible if the mass was malignant.

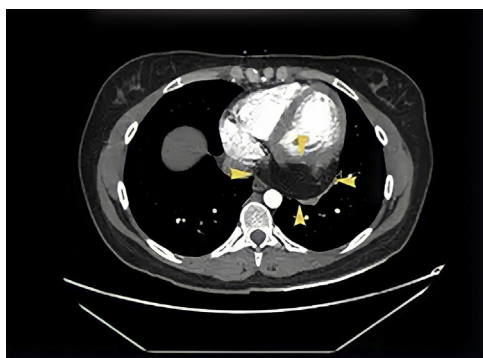
Following multidisciplinary discussion, EUS-FNB was planned. The procedure was performed in the cardiac

intensive care unit with endotracheal intubation and deep sedation. Radial EUS was initially performed to delineate the cardiac anatomy (Fig. 2) and identify the mass (Fig. 3). Linear EUS was then performed (Fig. 4), after the mass was identified, for biopsy. EUS from the gastroesophageal junction demonstrated ~3 cm of a heterogeneous, slightly hyperechoic mass within the left ventricle with no intervening vessels. Six passes with a 22-gauge SharkCore needle (Medtronic, Dublin, Ireland) were performed (Fig. 5). The needle was directed through the esophageal wall, pericardium, left ventricle, and into the ventricular mass. EUS-tip tamponade, a hemostasis technique whereby pressure from the catheter sheath is applied to the mucosa through which the biopsy needle traveled, was performed postprocedurally without bleeding. Three days' worth of prophylactic antibiotics were administered. No immediate or delayed adverse events occurred. The postprocedural echocardiogram was negative for an effusion. Pathology revealed benign fibroadipose tissue (Fig. 6).

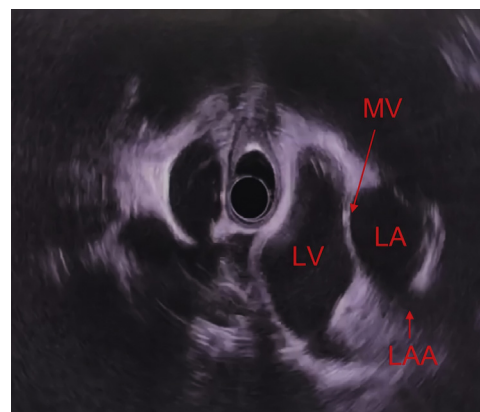
The patient ultimately underwent a successful cardiac transplant and is doing well. Cardiac EUS-FNB allowed for accurate diagnosis of the intraventricular mass.

### DISCLOSURE

*Dr Bhatt is a consultant for Medtronic, Boston Scientific, Steris, and Lumendi, and has ownership interest*



**Figure 1.** Cardiac magnetic resonance image demonstrating a large posterior intraventricular mass.



**Figure 2.** Radial ultrasound image of the left cardiac anatomy. LV, Left ventricle; LA, left atrium; LAA, left atrial appendage; MV, mitral valve.

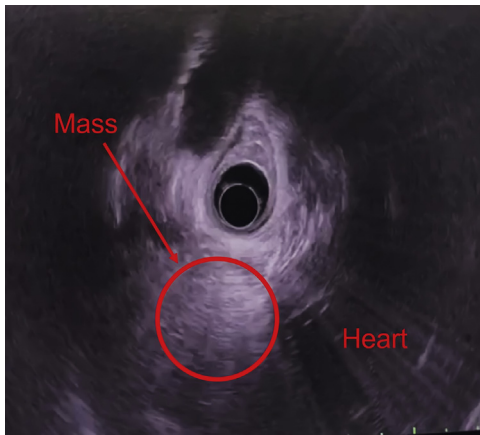


Figure 3. Radial ultrasound view of the intraventricular mass.

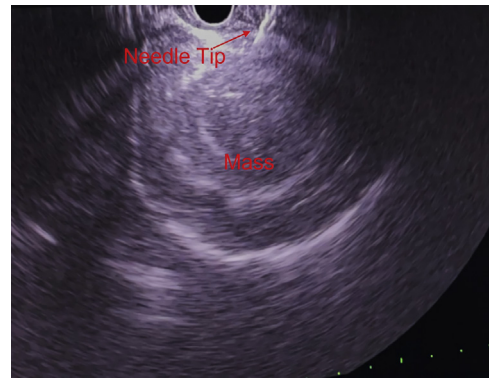


Figure 5. Linear endoscopic ultrasound view of fine-needle biopsy of the intraventricular mass.

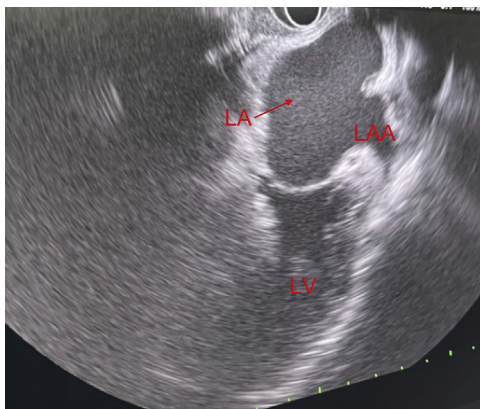


Figure 4. Linear ultrasound image of the left cardiac anatomy. LV, Left ventricle; LA, left atrium; LAA, left atrial appendage.

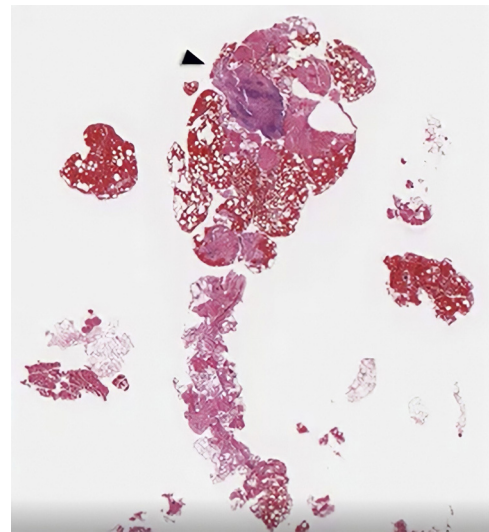


Figure 6. Pathology of the biopsy specimen demonstrating benign fibroadipose tissue (H&E, orig. mag. × 4).

(royalties) from Medtronic. Dr Mehta, Dr Joseph, Dr Harb, and Dr Kapadia disclosed no financial relationships.

Abbreviations: EUS-FNB, EUS-guided fine-needle biopsy; LA, left atrium; LAA, left atrial appendage; LV, left ventricle; MV, mitral valve.

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