

## A Heart Inside the Heart: Blood Cyst of Mitral Valve

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*We report a case of giant blood cyst originating from the anterior mitral valve leaflet, which was discovered during a two-dimensional echocardiography examination performed for investigation of a systolic murmur in a 34-year-old healthy man. Three-dimensional microbubble-enhanced images showed a heart-shape appearance that may be pathognomonic for blood cyst of the mitral valve. (ECHOCARDIOGRAPHY, Volume 25, September 2008)*

*blood cyst, mitral valve*

A 34-year-old apparently healthy man was referred to us to study a grade 2/6 systolic murmur. A transthoracic echocardiogram, parasternal long-axis view (Fig. 1) and real time three-dimensional apical four-chamber view (Fig. 2) showed a bilobulated, mobile cystic mass (22 × 15 mm), attached to the ventricular side of the anterior mitral leaflet. A contrast real time three-dimensional transthoracic echocardiogram apical four-chamber view confirmed

the cystic mass that resembled a “heart” into the left ventricle (Fig. 3A), and showed microbubbles inside cystic cavity during end-systole (Fig. 3B). Trivial to mild mitral regurgitation without stenosis was present, and a peak gradient of 14 mmHg through the left ventricular outflow tract was recorded (Figs. 4A–C). Ventricular size and ejection fraction were normal.

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**Figure 1.** Transthoracic echocardiographic parasternal long-axis view showing large, cystic, bilobulated mass attached to the anterior mitral leaflet.



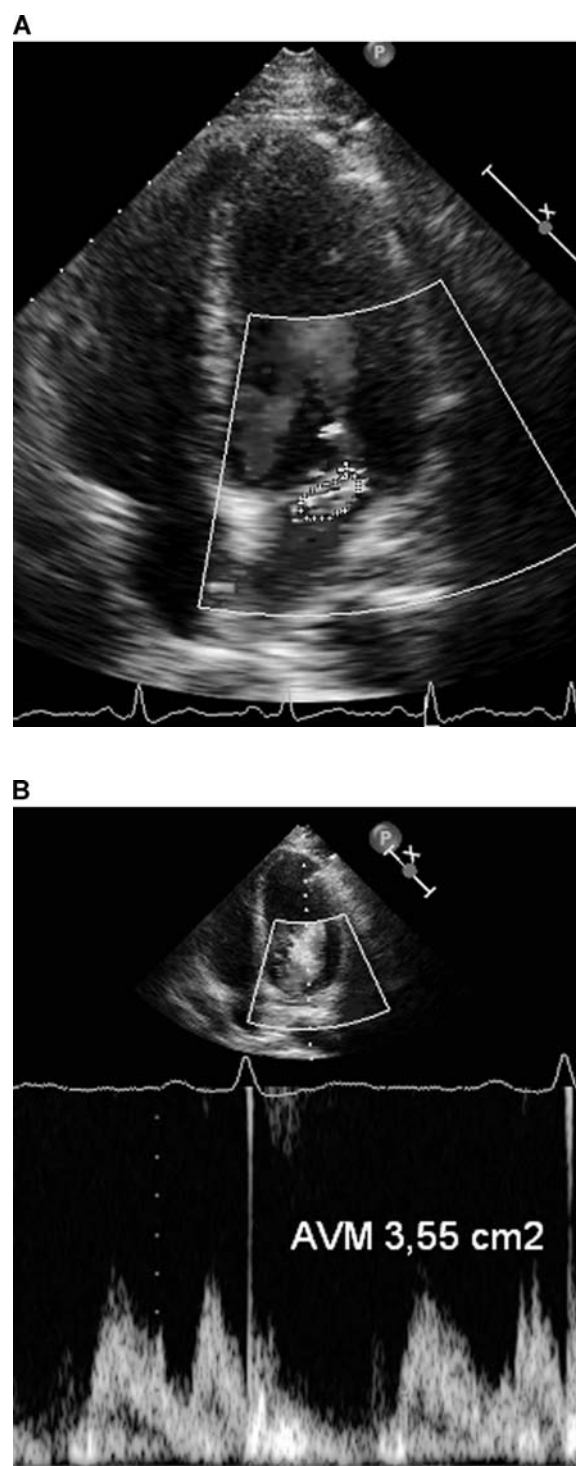
**Figure 2.** Real time three-dimensional transthoracic echocardiographic apical four-chamber view showing cystic, bilobulated mass.



**Figure 3.** **A.** Real time three-dimensional transthoracic echocardiographic apical four-chamber view with ultrasonographic contrast showing heart-shaped cyst into the left ventricle. **B.** Note the presence of microbubbles in cystic mass (arrowhead).

Because the echocardiographic images were pathognomonic, the tentative diagnosis was a blood cyst. The patient was treated conservatively with periodic follow-up. At 6 months after the initial diagnosis, the echocardiographic examination did not show any change.

The blood cysts are diverticuli lined by endothelium and filled with blood. Small cysts



**Figure 4.** **A.** Transthoracic echocardiogram parasternal long-axis view with color flow Doppler. Note trivial-mild mitral regurgitation (circle). **B.** Transmitral doppler tracings showing normal mitral valve area. **C.** Continuous wave doppler recording through the left ventricular outflow tract.

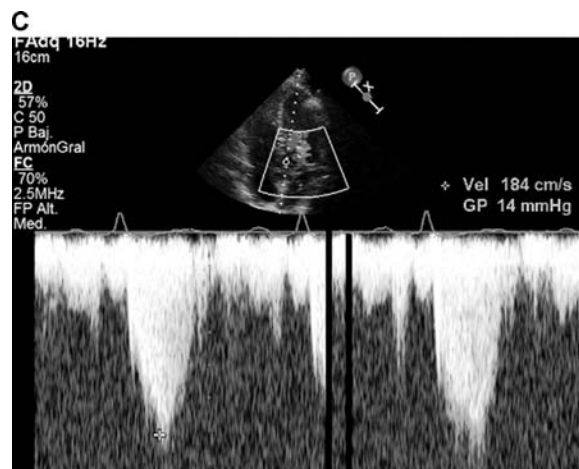


Figure 4. Continued.

are sometimes found in autopsies of fetuses and infants,<sup>1</sup> but in most cases they regress spontaneously and are rare in adults. They are usually detected on tricuspid and mitral valves. Microbubble contrast can be seen inside cystic cavity during systole (Fig. 3B), suggesting connections between ventricles and cysts lumens by small channels lined by endothelium. When discovered in adults, they are generally asymptomatic but occasionally result in inflow or outflow obstruction or valvular regurgitation. Although some authors have recommended surgical removal at the time of diagnosis,<sup>2</sup> because the natural history is unknown an asymptomatic cyst can be safely monitored with interval echocardiography.<sup>3</sup>

In a review of the medical literature, two previous cases of the tricuspid valve blood cysts showed the echocardiographic appearance of a “heart-shaped” mass.<sup>3,4</sup>

To our knowledge, we report the first case of a mitral valve blood cysts visualized by real time three-dimensional transthoracic echocardiography. In addition, on our three-dimensional microbubble-enhanced images, the mitral blood cyst routinely became heart shaped during ventricular systole, similar to what was previously reported for tricuspid valve blood cyst. Therefore, a heart-shape appearance in systole may be pathognomonic for blood cyst of either the tricuspid or the mitral valve.

## References

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## Supplementary Material

The following supplementary material is available for this article online:

**Video clips:** Figures 2 and 3A.  
Cinepak Codec.