A 75-year-old female patient with a known history of congestive heart failure and functional mitral regurgitation (MR) was admitted to the hospital with New York Heart Association class 3 symptoms. She was taking heart failure medication. The physical examination revealed a 5/6 systolic murmur and an electrocardiogram demonstrated a normal sinus rhythm with a heart rate of 89 bpm. Two-dimensional (2D) transthoracic echocardiography showed a dilated left ventricular cavity with an ejection fraction of 35% and moderate MR. The patient was referred to the transesophageal echocardiography (TEE) laboratory to examine the MR. Two-dimensional TEE indicated moderate to severe MR with normal mitral valve structure (Figure A, B, Video 1, 2*). However, three-dimensional TEE revealed an isolated cleft of the posterior mitral leaflet (Figure C, D, Video 3, 4*). The organic reason for MR was diagnosed and the treatment was changed to surgical repair rather than medical follow-up. An isolated cleft mitral valve without any other feature of atrioventricular septal defect is not a common congenital cause of MR. Three-dimensional TEE has an incremental value over 2D TEE in the assessment of isolated cleft mitral valve anatomy.

Figures—Two-dimensional transesophageal echocardiography. (A) Five-chamber view. Normal mitral valve (MV) structure is seen. (B) Commissural view with color Doppler. Moderate to severe mitral regurgitation is seen. Left atrium (LA), left ventricle (LV), and pulmonary vein (PV) are also seen. Live/real-time three-dimensional transesophageal echocardiography. (C) Aortic valve (AV) and mitral valve (MV) are seen. Arrow shows cleft of posterior mitral leaflet. (D) Color Doppler. *Supplementary video files associated with this presentation can be found in the online version of the journal.