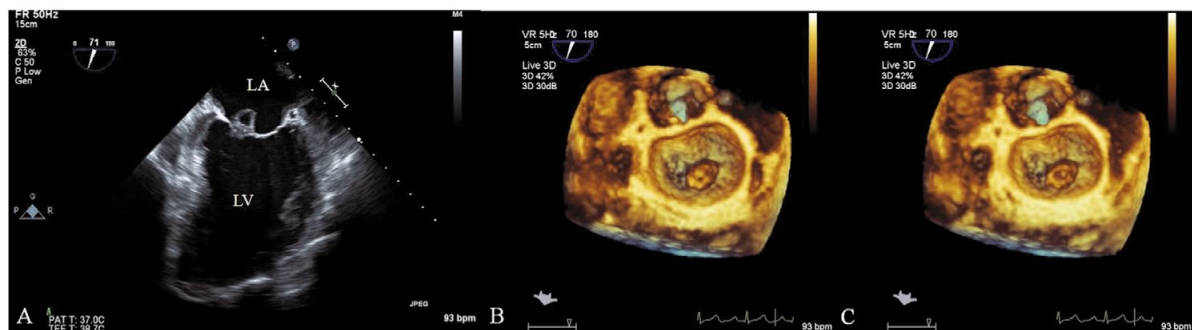


## Abscess Pocket in the Vegetation Confirmed on 3-Dimensional Transesophageal Echocardiography

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**Figure 1.** (A) Two-dimensional transesophageal echocardiography showed a round mass attached on the left atrial (LA) side of the anterior mitral leaflet (AML). A central halo was noted in the mass. (B) Three-dimensional echocardiography (3DE) showed a round mass on the LA side of the A3 portion of the AML. (C) Cropping into the 3DE acquisition showed the abscess pocket in the mass. LV, left ventricle.

**A** 51-year-old woman with end-stage renal disease was admitted with a 1 month history of general weakness and persistent fever. Chronic diabetic foot ulcer was noted on the right heel with calcaneal exposure. Blood and wound cultures had grown *Pseudomonas aeruginosa* (*P. aeruginosa*).

Transthoracic echocardiography indicated a hypochoic and homogenous round mass on the left atrial (LA) side of the anterior mitral leaflet (AML), suggesting vegetation. To evaluate associated complications, transesophageal echocardiography (TEE) was done. The 1.4×1.6-cm mass was attached on the LA side of the A3 portion of the AML. The presence of a central halo was noted in the mass. Given that mitral valve aneurysm is frequently associated with infective endocarditis,<sup>1</sup> more detailed anatomic information was needed for a differential diagnosis. Three-dimensional TEE (3D-TEE) confirmed the pocket formation in the mass (Figure 1). The echocardiographic findings suggested abscess pocket formation in the vegetation, rather than mitral valve aneurysm. Inside the pocket, there was no evidence of thrombus formation. Also, there was no

evidence of embolic events.

Because of uncontrolled infection and the possibility of pus spreading out into the cardiac structures, we decided to proceed with operation. After resection of the mass with AML, mitral valve was replaced by mechanical prosthetic valve. There was a septated space in the mass. The space was open to the left ventricular side. Histopathology showed suppurative inflammation of the mass (Figure 2).

Infective endocarditis caused by *P. aeruginosa* in patients without i.v. drug use is extremely rare.<sup>2</sup> There have been few data on the complications due to *P. aeruginosa* infective endocarditis. In the present case, an abscess pocket was formed in the vegetation, and this was clearly identified on 3D-TEE.

Echocardiography plays a fundamental role in the diagnosis of infective endocarditis, complication recognition, and therapeutic decision making.<sup>3</sup> 3D-TEE additionally provided detailed anatomic information,<sup>4-6</sup> and therefore has increased usefulness in identifying infective endocarditis lesions and their complications.

To our knowledge, the present case of *P. aeruginosa* infec-

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**Figure 2.** (A) Resection of the anterior mitral leaflet with vegetation. (B) The vegetation contained a septated abscess pocket inside. (C) There was a small hole on the left ventricular side of the abscess pocket. (D) The septated space was open to the left ventricle. (E,F) On histopathology suppurative inflammation of the mass was seen (H&E; E,  $\times 40$ ; F,  $\times 100$ ), including neutrophil infiltration, fibrinous exudates, granulation tissue and bacterial colonies (black arrows), which were compatible with abscess pocket.

tive endocarditis complicated with abscess pocket formation in the vegetation, confirmed on 3D-TEE, is the first to be reported in the literature.

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#### References

1. Kawai S, Oigawa T, Sunayama S, Yamaguchi H, Okada R, Hosoda Y, et al. Mitral valve aneurysm as a sequela of infective endocarditis: Review of pathologic findings in Japanese cases. *J Cardiol* 1998; **31**(Suppl 1): 19–36.
2. Dawson NL, Brumble LM, Pritt BS, Yao JD, Echols JD, Alvarez S. Left-sided *Pseudomonas aeruginosa* endocarditis in patients without injection drug use. *Medicine (Baltimore)* 2011; **90**: 250–255.
3. Thuny F, Gaubert JY, Jacquier A, Tessonier L, Cammilleri S, Raoult D, et al. Imaging investigations in infective endocarditis: Current approach and perspectives. *Arch Cardiovasc Dis* 2013; **106**: 52–62.
4. Vrettou AR, Zacharoulis A, Lerakis S, Kremastinos DT. Revealing infective endocarditis complications by echocardiography: The value of real-time 3D transesophageal echocardiography. *Hellenic J Cardiol* 2013; **54**: 147–149.
5. Kim J, Lee M, Lee JY, Lee JY, Choi KH, Lim SH, et al. Traumatic tricuspid valve detachment from annulus diagnosed on 3-D transesophageal echocardiography. *Circ J* 2013; **78**: 259–261.
6. Faletra FF, Regoli F, Acena M, Auricchio A. Value of real-time transesophageal 3-dimensional echocardiography in guiding ablation of isthmus-dependent atrial flutter and pulmonary vein isolation. *Circ J* 2012; **76**: 5–14.