A 48-year-old man with a medical history of hypertension was admitted with acute dyspnea and pyrexia. Echocardiographic examination revealed a dilated and volume-overloaded left ventricle and severe mitral regurgitation due to ruptured chordae tendineae resulting in posterior leaflet prolapse. Blood cultures were negative. The patient was treated with antibiotics considering that he had a chest infection based on the admission chest x-ray, diuretics, and angiotensin converting enzyme inhibitors, and his clinical condition improved. Subsequently, he was referred for cardiac surgery. Coronary angiography demonstrated normal coronary anatomy, and he had mitral valve repair with placement of a 27-mm Duran flexible mitral ring. Postoperatively, he developed pyrexia. Numerous blood cultures were negative, but on the 14th postoperative day serological tests came back positive for Coxiella burnetti. He was treated with the combination of doxycycline and chloroquine. On the 25th postoperative day, he developed acute dyspnea, and an echocardiographic study (Figure 1, online-only Data Supplement Movie I) revealed severe eccentric, mainly periring, mitral regurgitation due to dehiscence of the mitral annuloplasty ring. Real-time 3-dimensional (3D) transesophageal echocardiography revealed a rocking mitral annuloplasty ring and precisely demonstrated the location and extent of dehiscence (Figures 2 and 3, online-only Data Supplement Movies II and III). The patient had an urgent mitral valve replacement with a 27-mm ATS (ATS Medical Inc, Minneapolis, Minn) bileaflet mechanical valve. The procedure was well tolerated and the recovery was uneventful. Multiple postoperative echocardiographic studies revealed a well functioning mitral valve prosthesis (Figure 4 and online-only Data Supplement Movie IV).

The evaluation of mitral valve pathology is one of the most challenging clinical applications of real-time 3D echocardiography and particularly of real-time 3D transesophageal echocardiography.1–3 In our case, the initial diagnosis of dehiscence of the mitral annuloplasty ring was made by 2-dimensional echocardiography, but only real-time 3D transesophageal echocardiography provided an accurate evaluation of the location, extent, and type of pathology, demonstrating its incremental advantage over 2-dimensional echocardiography.

Disclosures

None.

References

Figure 1. Two-dimensional transesophageal echocardiographic long-axis view showing the detached mitral annuloplasty ring during systole (A) and diastole (B). AR indicates annuloplasty ring; LA, left atrium; and LV, left ventricle.

Figure 2. Real-time 3D transesophageal echocardiography of the mitral valve viewed from the left atrium showing the exact location and extent of dehiscence. Almost 50% of mitral annuloplasty ring perimeter (anterolateral side; arrows) is detached from the native mitral annulus. LV indicates left ventricle.

Figure 3. Real-time 3D transesophageal echocardiography of the mitral valve viewed from the left atrium and anteriorly showing the motion of the detached mitral annuloplasty ring in relation to the native mitral annulus during systole (A, upwards movement into left atrium) and diastole (B, downwards movement into left ventricle). LA indicates left atrium; LV, left ventricle.
Figure 4. Real-time 3D transesophageal echocardiography of the prosthetic bileaflet mitral valve viewed from the left atrium showing the well functioning mitral prosthesis during systole (A) and diastole (B).
Real-Time 3-Dimensional Transesophageal Echocardiography: Precise Evaluation of a Rocking Mitral Annuloplasty Ring
Loukianos S. Rallidis, Evangelos Voltyrakis, Agathi Vrettou, Gerasimos Filippatos, Ioannis Paraskevaidis and Dimitrios T. Kremastinos

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