

Double cardiac pseudoaneurysm in a postoperative patient

Bir hastada ameliyat sonrası iki adet kardiyak psödoanevrizma

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Summary– A mitral-aortic intervalvular fibrosa pseudoaneurysm is a rare complication after aortic and mitral valve replacement and aortic root replacement. A left ventricular pseudoaneurysm after mitral valve replacement is also a rare complication. Here, we describe a 48-year-old woman with a history of a Bentall operation and mitral valve replacement 6 years before, presenting with double pseudoaneurysms in the left ventricle and mitral-aortic intervalvular fibrosa, detected via transesophageal echocardiography.

A mitral-aortic intervalvular fibrosa (MAIVF) pseudoaneurysm is a rare complication after aortic and mitral valve replacement,^[1] and aortic root replacement.^[2] Diagnosis of these aneurysms is important because of their unclear natural course.^[3] Left ventricular (LV) pseudoaneurysms after mitral valve replacement, iatrogenic or infective, are also rare complications.^[4] Transesophageal echocardiography (TEE) is a good imaging modality on suspicion of MAIVF and LV pseudoaneurysms in clinical evaluation and transthoracic echocardiography.^[5]

We report a case of the coexistence of MAIVF and LV pseudoaneurysms many years after a Bentall operation and mitral valve replacement. They were accompanied by symptoms of angina and dyspnea, and diagnosed on TEE.

CASE REPORT

A 48-year-old female patient with a history of controlled diabetes, hypertension, and dyslipidemia was admitted due to exertional chest pain and dyspnea (New York Heart Association [NYHA] functional class II) refractory to medical treatment of 6 months'

Özet– Mitral kapak ve aort kökü replasmanından sonra mitral-aortik intervalvüler psödoanevrizma nadir görülen bir komplikasyondur. Mitral kapak replasmanından sonra sol ventrikül psödoanevrizması da seyrek görülen bir komplikasyondur. Burada, başvurusundan altı yıl önce Bentall operasyonu ve mitral kapak replasmanı geçirmiş, transözofageal ekokardiyografide sol ventrikülde iki adet psödoanevrizma ve mitral-aortik intervalvüler fibroz saptanan 48 yaşındaki bir kadın hastayı tanımlıyoruz.

duration. She had undergone coronary artery bypass graft, a Bentall operation (composite graft, 21 mm), and mechanical mitral valve replacement (St. Jude, 27 mm) approximately 6 years previously, and insertion of a permanent pacemaker for a complete heart block 3 years earlier. About 4 months prior to admission, selective coronary angiography revealed the left main artery occluded at its origin, the left anterior descending artery filled via the left internal mammary artery, the left circumflex artery filled retrogradely via the left anterior descending artery, one saphenous vein graft occluded, and a normal right coronary artery. There was no history of fever.

On first physical examination, blood pressure was 120/80 mmHg, pulse rate was 75 bpm, and temperature was 37.1°C. The lungs were normal on examination, and the heart auscultation revealed prosthetic valve sounds, with no audible murmur. Abdominal and skin examinations were normal, and the extremities did not show peripheral edema. A paced rhythm was visible on electrocardiography. Lab data was within normal

Abbreviations:

LV	Left ventricular
MAIVF	Mitral-aortic intervalvular fibrosa
TEE	Transesophageal echocardiography

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limits, except for hemoglobin and hematocrit, which were 10.6 gr/dl and 33.8%, respectively. Blood cultures were negative. Chest X-ray showed normal lung tissue with evidence of mechanical prosthetic aortic and mitral valve and a dual-chamber pacemaker.

TEE showed a large MAIVF pseudoaneurysm (38x51 mm) with a wide connection to the LV (18 mm) and another pseudoaneurysm in the base of the LV posterolateral wall (16x9 mm), which was also connected to the left atrium, resulting in moderate paravalvular leakage from the lateral side of the mitral sewing ring (Figure 1, Video 1 and 2*). Otherwise, the mechanical aortic and mitral valve appeared to be functioning normally. The global LV ejection fraction was about 35%. The pacemaker leads were visible in their appropriate positions.

The patient refused high-risk surgery, and consequently underwent off-pump, minimally-invasive coronary artery bypass surgery via left thoracotomy, during which a saphenous vein graft was anastomosed from the descending aorta to the left circumflex artery to treat her chest pain. She was discharged healthy.

DISCUSSION

We describe a patient with MAIVF and LV pseudoaneurysms diagnosed via TEE following a previous Bentall operation and mitral valve surgery. An MAIVF pseudoaneurysm can be iatrogenic and is deemed a rare complication after aortic or mitral valve surgery.

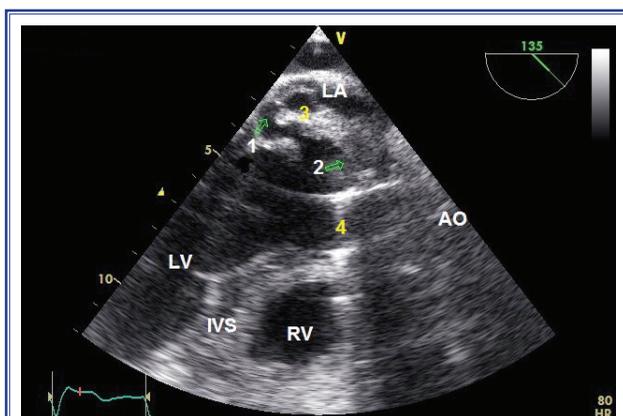


Figure 1. 1- The orifice of the left ventricular pseudoaneurysm; 2- The right arrow shows the orifice of the mitral-aortic intervalvular fibrosa (MAIVF) pseudoaneurysm; 3- Prosthetic mitral valve; 4- Prosthetic aortic valve; LA: Left Atrium; LV: Left ventricle; AO: Aorta; RV: Right ventricle; IVS: Interventricular septum.

[1] The symptoms of MAIVF pseudoaneurysm are variable, from the absence of any symptom to sudden death.^[3] In an iatrogenic MAIVF pseudoaneurysm, the surgical suture could cause disruption of the intervalvular fibrosa, and thus give rise to a pseudoaneurysm.^[1]

In our patient, the pseudoaneurysms were diagnosed years after surgical intervention and were associated with a reduced LV ejection fraction and angina. Heart failure occurs when a pseudoaneurysm communicates with the ascending aorta or the LV,^[3] and angina may occur as a consequence of ischemia, as was the case in our patient.

In an observational study, asymptomatic patients without new leakage or LV remodeling were conservatively managed for 4 years,^[1] but our patient was symptomatic with a reduced LV ejection fraction. The treatment of choice for MAIVF pseudoaneurysm is surgery; however, it is rendered technically complex by previous cardiac surgery and its associated morbidity and mortality cannot be considered negligible.^[3]

The common etiologies of LV pseudoaneurysms are myocardial infarction^[6] and surgical procedures such as mitral valve replacement.^[4] Separation of the mitral annulus from the fibrous skeleton of the heart can be a possible cause. Pseudoaneurysms following mitral valve replacement tend to be subannular in location.^[7]

LV ruptures are classified as three types according to the time of the rupture: early, delayed, and late. Early ruptures comprise the most common category and are defined as events in the operating room any time after the discontinuation of cardiopulmonary bypass. Delayed ruptures occur in the recovery room, usually hours to days after surgery. Late ruptures are events which occur days to years after valve replacement and present as pseudoaneurysms.^[8] The most common clinical presentation of LV pseudoaneurysms is heart failure.^[9] TEE can show the size and communication of pseudoaneurysms of MAIVF and LV lateral wall to the LV cavity. A narrow neck, systolic expansion, and diastolic collapse can be suggestive of a pseudoaneurysm.

Presence of heart failure and pseudoaneurysm size (>3 cm in diameter) are indications for surgery.^[10] Due to increased surgical risk, our patient refused surgery for the repair of the pseudoaneurysms, and was

therefore subjected to off-pump, minimally-invasive coronary artery bypass surgery via left thoracotomy, during which a saphenous vein graft was anastomosed from the descending aorta to the left circumflex artery for the treatment of chest pain.

In the clinical evaluation of patients with multiple surgical procedures, the likelihood of the occurrence of various complications should be taken into consideration.

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***Supplementary video files associated with this article can be found in the online version of the journal.**

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Key words: Echocardiography; left ventricle; mitral-aortic intervalvular; pseudoaneurysm.

Anahtar sözcükler: Ekokardiyografi; left ventrikül; mitral-aortik intervalvüler; psödoanevrizma.