

## Successful treatment of infected left ventricular pseudoaneurysm related to empyema

### *Ampiyeme baęlı enfekte sol ventrikül psödoanevrizmasının başarılı tedavisi*

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### Introduction

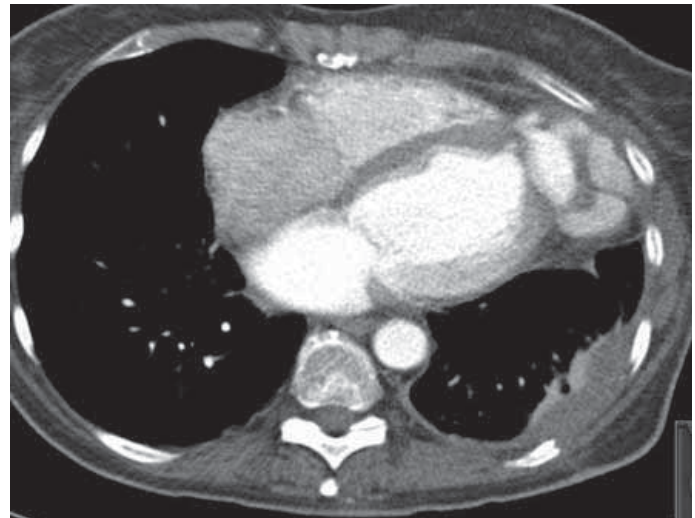
Left ventricular (LV) pseudoaneurysm occurs after myocardial wall rupture, which contains the pericardium and mural thrombi or adhesion tissue (1). Untreated pseudoaneurysms have an approximately 45% risk of rupture, however patients who undergo surgery have also high mortality rates (2). Here we present a case with infected left ventricular pseudoaneurysm related to empyema and successful treatment modality.

### Case report

A 66-year-old woman was admitted to another hospital due to left ventricular failure 7 years ago. Transesophageal echocardiography showed ruptured left ventricular apical aneurysm contained pericardial adhesions and thrombus with 30% ejection fraction. Coronary angiography revealed chronic occlusion of the left anterior descending artery. She underwent emergent coronary artery bypass grafting (the saphenous vein was used to bypass the left anterior descending artery) and the repair of the left ventricular apical aneurysm by the endoventricular circular patch plasty technique (Dor procedure) with a bovine pericardium (Periguard®, Bio-Vascular, Inc, St Paul, MN, USA) in our center. She was discharged in a good condition after an uneventful postoperative period.

The patient readmitted with respiratory distress, fever, loosing weight and left 5th and 6th costal pain after 7 years of first cardiac operation. Several separate sets of blood and urine cultures were positive for Propionibacterium and Klebsiella Pneumonia, respectively. Both computed tomography (CT) scan and cardiac magnetic resonance imaging revealed left pleural fluid collection and gross left ventricular apical pseudoaneurysm (64.3 mm) containing thrombus destructing costae and pleura (Fig. 1). Transesophageal echocardiography revealed apical displacement of the papillary muscles, substantial tenting of the mitral valve leaflets resulting in severe mitral regurgitation.

The cultures of pleural effusion specimen showed no germ growth and she had persistent pleural collection with pleural thickening. Due to



**Figure 1.** Thoracic computed tomography scan of the patient shows the gross apical pseudoaneurysm (64.3 mm) containing thrombus destructing costa and pleura

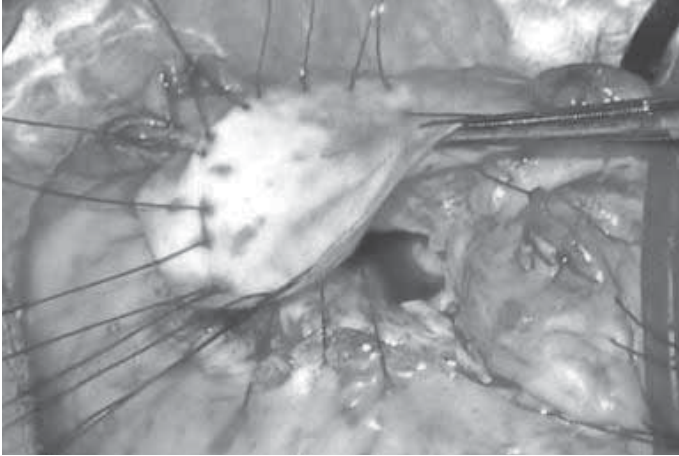
persistent respiratory distress, the patient underwent partial decortication through thoracotomy. In this term, intervention for the repair of pseudoaneurysm concomitant to decortication procedure did not intend, considering of poor condition of the patient. However, redo cardiac surgery had to be planned because the control CT scan revealed an increasing diameter of the left ventricular pseudoaneurysm in 1 month and there was a suspicion of left ventricular patch endocarditis.

During the operation, the pseudoaneurysm was filled with a large amount of thrombus that seemed infected. The cavity had continuity to the pleura and the subcostal space. Following irrigation of all tissue, double layer circular patch plasty with bovine pericardial patch was performed to repair the defect (Fig. 2). Mitral valve ring annuloplasty was achieved concomitantly (32 mm. Edwards Lifesciences®, Irvine, CA,

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**Figure 2. Appearance of infected apical pseudoaneurysm during circular patch plasty technique, restoring a more normal geometry to the left ventricle**

USA). The pathologic examination of the excised specimen showed organizing hematoma with fragments of thin fibrous membrane, consistent with a pseudoaneurysm and the microbiological test revealed *Propionibacterium* and coagulase-negative *Staphylococci* species.

She was under intravenous antibiotic therapy till postoperatively fourth day, with meropenem trihydrate. Then subsequently oral ampicilline/sulbactam therapy started and discharged with the same protocol. The patient made an uneventful recovery. She is still in well condition and under control in our outpatient clinic for 6 months.

### Discussion

Most investigators have advocated surgery as the appropriate treatment for LV pseudoaneurysm since untreated pseudoaneurysms have an approximately 45% risk of rupture and a high risk of embolic cerebrovascular accidents. Patients who require concomitant mitral valve intervention due to mitral regurgitation have even higher

perioperative risk (3). Pseudoaneurysm complicating infective process – like in our case - carries almost always a bad prognosis because of the propensity to rupture (4).

The direct microbiological examination of former infected patch revealed coagulase-negative *Staphylococci* and *Propionibacterium* species in our case. Although the blood and urine cultures showed *Propionibacterium* species and *Klebsiella pneumonia* respectively, and direct patch culture revealed both *Staphylococcus* and *Propionibacterium* species, we were not able to identify any bacteria in pleural aspirate probably depending on broad-spectrum antibiotics. However, in the present case there was a high degree of suspicion that the primary infection was post-pneumonic empyema.

### Conclusion

Left ventricular infected pseudoaneurysm and mitral valve regurgitation are an unfavorable combination. We are not aware of previous reports with a successful treatment of infected pseudoaneurysm resulting both in left ventricular failure and mitral insufficiency as a complication of empyema after left ventricular patch plasty although such a finding may explain some deaths with this condition. Our case showed that aggressive early medical and surgical intervention could change the worse course.

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