

Surgical approach to giant pseudoaneurysm of the left ventricle

Sol ventrikülün dev yalancı anevrizmasına cerrahi yaklaşım

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Left ventricular pseudoaneurysm is a rare, but life-threatening complication occurring after acute myocardial infarction. Early diagnosis and surgery are critical for the patients' recovery. An 80-year-old man was admitted to hospital with severe dyspnea. Coronary angiography and ventriculography showed a giant left ventricular pseudoaneurysm. Surgical approach to pseudoaneurysm was made through the mitral valve and directly from the aneurysmal sac. Defect was closed by Dacron patch. Postoperative period was uneventful and patient was discharged from hospital seven days after surgery.

Key words: Left ventricle; myocardial infarction; pseudoaneurysm.

A left ventricular pseudoaneurysm is a rare and usually fatal complication of acute myocardial infarction (MI).^[1] It is characterized by the rupture of the left ventricular myocardium, with the aneurysm being contained by the pericardium or scar tissue.^[1] Although the risk of rupture is high in cases involving an acute left ventricular pseudoaneurysm, the risk depends on the size of the pseudoaneurysm in chronic cases.^[2]

CASE REPORT

An 80-year-old male patient who had previously undergone coronary angiography was referred to another medical center with symptoms of increasing dyspnea and epigastric pain. In the angiographic views, there was a plaque lesion of the left anterior descending artery (LAD) and 30-40% stenosis of the right coronary artery (RCA). The right posterolateral artery was totally occluded. A giant aneurysm at the

Sol ventrikül psödoanevrizması akut miyokard enfarktüsü sonrası oluşan nadir, fakat yaşamı tehdit eden bir komplikasyondur. Erken tanı ve cerrahi, hastanın iyileşmesi için önemlidir. Seksen yaşında erkek hasta ciddi nefes darlığı ile hastaneye başvurdu. Koroner anjiyografi ve ventrikülografide dev sol ventriküler psödoanevrizma görüldü. Psödoanevrizmaya cerrahi yaklaşım mitral kapak ve doğrudan anevrizma kesesinden yapıldı. Defekt, Dacron yama ile kapatıldı. Ameliyat sonrası dönem sorunsuzdu ve hasta cerrahi sonrası 7. günde taburcu edildi.

Anahtar sözcükler: Sol ventrikül; miyokard enfarktüsü; yalancı anevrizma.

inferobasal segment of the ventricle was observed via ventriculography (Figure 1). Because of these symptoms, the patient was referred to our clinic for an aneurysmectomy. An echocardiographic evaluation showed that there was a pseudoaneurysm that was 13x8.7 cm at its widest part and 2.6 cm in diameter at the neck at the inferobasal segment of the ventricle. Suspicious thrombus material was also detected inside the pseudoaneurysm sac. The echocardiography further revealed that the diameter of the ascending aorta was 4.3 cm, the diastolic left ventricular diameter was 6.9 cm, the systolic diameter of left ventricle was 5 cm, and the ejection fraction was 50%. There was also second-degree mitral regurgitation. In addition, a three-dimensional (3D) computed tomography (CT) evaluation showed that there was a ventricular pseudoaneurysm originating from the inferior segment of left ventricle with a diameter of 12x13.5 cm. This pseudoaneurysm had a shift effect at the left lobe of the



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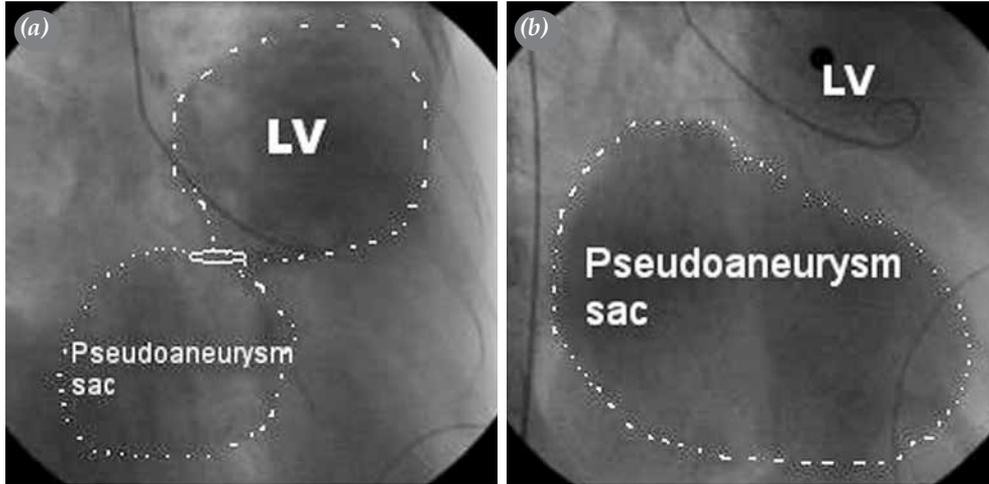


Figure 1. (a) The neck of the pseudoaneurysm sac is shown by eclipse. (b) The borders of the giant pseudoaneurysm are shown. LV: Left ventricle.

liver anterolaterally and the stomach posteroinferiorly. Furthermore, the descending aorta and esophagus were also shifted (Figure 2).

In the operation, after anesthetic induction and a median sternotomy, transesophageal echocardiography (TEE) was performed, and a pseudoaneurysm measuring 8x13 cm and originating from the inferobasal segment of the left ventricle was confirmed. Next, standard aortobicaval cannulation was done via cardiopulmonary bypass (CPB), and after placing a cross-clamp, a left atriotomy was also performed. We tried to reach the orifice of the pseudoaneurysm just below the mitral valve, but since a sufficient view could not be obtained, after dissecting the area surrounding the pseudoaneurysm, we opened the aneurysmal sac and reached the defect (approximately 5 cm in size) from inside the pseudoaneurysm. We closed it with a Dacron patch using pledgeted sutures.

Afterwards, the border of the patch was sutured again with 4/0 propylene sutures via an “over-and-over” technique (Figures 3 and 4). De-airing was performed in the Trendelenburg position by ventilating the lungs and suctioning the right upper pulmonary vein and aortic root vent. The aortic clamp was then released. The patient was weaned from CPB after positive inotropic support was initiated and hemodynamic stability was achieved. Following the weaning, TEE was performed again, and there was no mitral regurgitation. During the operation, 2500 mL of fluid was filtrated by hemofiltration. Extubation was done on postoperative day two, and by decreasing the inotropic dosage, the patient was removed from the intensive care unit (ICU) on postoperative day four. The aneurysm material was sent to the pathology department, which reported that the biopsy material contained no myocardial tissue. No complications occurred during the hospital stay,

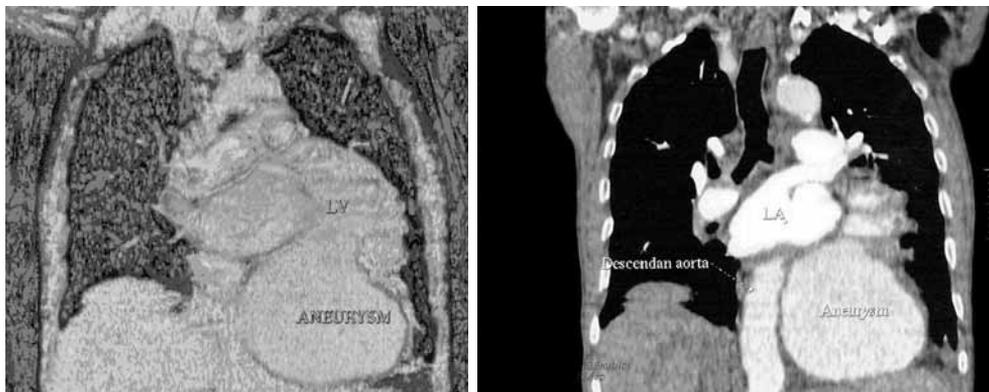


Figure 2. Computed tomography views of the LV pseudoaneurysm. LV: Left ventricle; LA: Left atrium.



Figure 3. Sutures taken from the neck of the pseudoaneurysm.



Figure 4. The defect was closed with a Dacron patch.

and the patient was discharged on postoperative day seven.

DISCUSSION

Left ventricular pseudoaneurysms are rare entities that normally occur after acute MI or cardiac surgery, and more often than not, they are lethal.^[1] Although they are usually symptomatic, in asymptomatic patients, a diagnosis can be made by clinical suspicion and further tests. Furthermore, after observing the suspicious mass by telecardiography, a diagnosis can easily be made via echocardiography, CT, or ventriculography. Because of the loose tissue on the wall of the aneurysm, the risk of rupture is potentially high for patients with acute aneurysms. Although the risk of rupture is low with chronic pseudoaneurysms, cases have been reported in which this occurred.^[1,3,4] Elective surgical repair is recommended for chronic symptomatic and for asymptomatic left ventricular pseudoaneurysms larger than 3 cm that show expansion. For pseudoaneurysms smaller than 3 cm that do not show expansion, the patients can be followed up to check for further growth.^[2] Emergent surgical repair must be performed in patients with acute left ventricular pseudoaneurysms.

Surgical repair of pseudoaneurysms (with or without revascularization) usually provides symptomatic improvement. If there is thrombus formation in the pseudoaneurysm sac, a left ventricular dissection must be performed after the insertion of the aortic clamp. In pseudoaneurysms with smaller neck diameters, the neck can be closed with the aid of the fibrotic borders, but in larger pseudoaneurysms and those that are located at the basal segment of the heart, closure with a patch is preferable. After the essential coronary revascularization and repair of the mitral regurgitation, the surgery is completed.^[5] There are two surgical methods for pseudoaneurysms: the conventional and

transatrial approaches. In the conventional approach, the pseudoaneurysm sac is excised from the lateral free wall, whereas in the transatrial approach, the neck of the pseudoaneurysm is closed below the mitral valve.^[6] The transatrial approach has an advantage because of the risk of embolus during dissection and the difficulty of the dissection, but the conventional approach is better in some cases because of better exposure and the total excision of the pseudoaneurysm sac. In this case, the transatrial approach was tried first, but because of inadequate exposure, the pseudoaneurysm sac was then excised using the conventional approach.

In conclusion, we presented a case involving a giant pseudoaneurysm of the left ventricle due to the occlusion of the right posterolateral artery. The patient exhibited dyspnea and epigastric pain that were determined by diagnostic studies. After surgery to remove the aneurysm, no complications were seen, and the patient was discharged at postoperative day seven with no complications.

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