Surgical Treatment For A Giant Postinfarction Left Ventricular Pseudo-FALSE Aneurysm

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Citation

Abstract
Postinfarction ventricular peudoaneurysm is a rare complication. These cases rarely survive and hematoma is limited with pericardium. After the acute episode a pseudoaneurysm develops due to organizing cavity. Surgical approach remains the treatment of choice.

In this study we present a case of a left ventricular (LV) pseudoaneurysm due to a previous myocardial infarction, which patch closure and coronary artery bypass was carried successfully.

We believe that morbidity and mortality rates are low for endoventricular circular “patch plasty” technique which is a reliable method for left ventricle pseudoaneurysm repair and that it improves hemodynamics and long-term functional capacity.

INTRODUCTION
Pseudoaneurysm is a rare complication of left ventricle myocardial infarction. Rupture with tamponade and sudden death is the usual outcome. This pathology is often diagnosed accidentally because of non-specific clinical manifestations such as congestive heart failure or no symptoms at all. Long term survival cases without surgery are rare. Surgical repair of LVA was first performed by Charles Bailey in 1954, and the first resection under cardiopulmonary bypass was reported by Denton Cooley in 1958. In 1985, Vincent Dor described an original surgical technique, the Endoventricular Circular Patch Plasty built on prior contributions by Cooley and Jatene.

CASE PRESENTATION
Our case was a 60-years-old man. He was admitted to our Cardiology Outpatient Clinic with complaints of progressive exertional dyspnea and increasing fatigue. He had a previous anterior myocardial infarction before 5 years. Transthoracic echocardiography revealed a large cystic cavity, 50mm in diameter. The echocardiographic diagnosis was a giant pseudoaneurysm communicating with the left ventricle. Contrast ventriculography confirmed the existence of a large cavity connected to the apex of the left ventricle, with sluggish flow of contrast within it and features suggestive of pseudoaneurysm (Figure 1).

We diagnosed that it was false aneurysm because of communicating with the left ventricle through a small orifice. The patient was referred for surgery because of coronary artery disease and a preoperative diagnosis of either a large ventricular pseudoaneurysm.
After cardiopulmonary bypass was established, the aorta was cross-clamped and cold cardioplegia was infused. A large postero-inferior aneurysm was densely adherent to the pericardium (Figure 2).

**Figure 2**

The pseudoaneurysm was opened and it contained a large amount of old thrombi

There was a 4 cm by 4 cm defect in the postero-inferior wall of the left ventricle, which communicated with the cavity of the pseudoaneurysm. Surgical repair was carried out after resection of the pseudoaneurysm of the left ventricle. Patch closure of the defect and coronary artery bypass grafting (Ao-Saphenous graft-LAD) was carried out (Figure 3).

**Figure 3**

Histopathologic examination of the resected material confirmed the diagnosis of pseudoaneurysm. It showed no myocardial element nor endocardium in the aneurysmal wall.

**DISCUSSION**

Postinfarction ventricular aneurysms may be either true or false, each with apparently definite diagnostic criteria on imaging techniques(4). Postinfarction left ventricular (LV) remodeling is characterized by LV dilatation and abnormal geometry leading to systolic and diastolic dysfunction. Development of a left ventricular pseudoaneurysm (LVPs) is a serious long-term complication of AMI, often leading to heart failure, ventricular tachycardia (VT) and thromboembolic events(3).

The most common cause of LVPs is acute occlusion of the left anterior descending artery (LAD), with aneurysm formation in the anterior wall and septum. Historically, about 10–30% of patients surviving a major myocardial infarction will develop a LVA. However, at present the incidence of LVPs appears to have decreased due to improved revascularization treatment of patients with AMI, likely reducing the incidence of permanently occluded LADs. Other improvements include better management of hypertension and avoidance of corticosteroids, both of which are known risk factors for LVPs development(3).

Diagnosis of pseudoaneurysm should result in an urgent surgical treatment as the risk of sudden death due to aneurysm rupture is high(2). The operation improves size and geometry of the LV, reduces wall tension and paradox movement and enhances overall systolic function(3). In addition, the procedure may treat the ventricular arrhythmia problem and also allows for removal of intracavitary thrombi. Myocardial revascularization is almost always performed, and mitral valve procedures are feasible through the ventriculotomy or by a standard atrial approach(3).

In conclusion; prompt diagnosis and early surgical intervention is essential for patients with large or expanding left ventricular pseudoaneurysms due to the high propensity of fatal rupture. Associated coronary artery bypass grafting may reduce early mortality of patients with left ventricular pseudoaneurysm by resuscitating the ischemic myocardium(5).

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