



## Repair of Left Ventricular Wall Pseudoaneurysm Following Myocardial Infarction (Simple Modification Dor Technique)

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### Abstract

A rare but serious complication of myocardial infarction is left ventricular pseudoaneurysm that is in need of urgent intervention to avoid unforeseeable fatal rupture. Here, we present a successful repair of posterolateral and basal left ventricular pseudoaneurysm case, using a modified Dor technique.

**Keywords:** Pseudoaneurysm; Dor technique; Left ventricular geometry

### Introduction

Rupture of the Left Ventricular (LV) wall is a rare but disastrous complication of myocardial infarction [1,2]. It is hardly contained by hematoma and pericardial adhesions creating a Pseudoaneurysm (PsA) [1]. Urgent surgical repair is required to prevent catastrophic rupture. Surgical repair aims to exclude the necrotic myocardium and aneurysmal area with a patch to preserve the LV geometry and function [3]. We report a case of LV PsA that was surgically repaired with a modified Dor technique.

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### Case Presentation

A 74-year old male patient with no significant past medical history was presented with a 6-week history of dyspnea. A chest X-ray was performed to evaluate symptoms which depicted enlarged cardiac silhouette. This was followed by transthoracic echocardiography that showed huge posterolateral and basal LV pseudoaneurysm (7 cm × 10 cm), LV systolic dysfunction (Ejection Fraction (EF) ≤ 20%), mild Mitral Regurgitation (MR) and Aortic Insufficiency (AI). Consequently, the patient underwent left heart catheterization that revealed a totally occluded left circumflex coronary artery, 80% stenotic lesion in the left anterior descending artery, intimal irregularity in the right coronary artery and large posterobasal and lateral LV pseudoaneurysm.

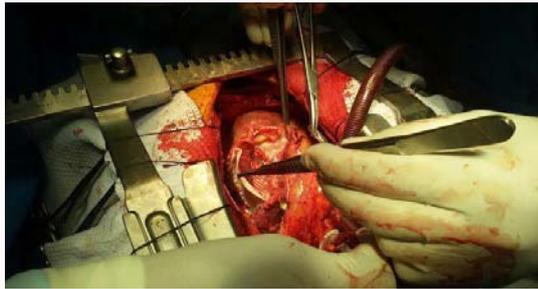
On the following day, after Intra Aortic Balloon Pump insertion (IABP), the patient underwent surgical repair of LV PsA (Dor procedure) using the modified technique along with bypass grafting of the left coronary system lesions.

Upon opening the pericardium, dense fibrinous adhesions were found suggestive of reactive pericarditis secondary to contained LV rupture. The pericardial adhesions were gently dissected. After initiating cardiopulmonary bypass, the heart was lifted upwards and contained rupture of a large posterolateral LV PsA was identified. The posterior wall of LV was opened over the PsA area and an organized thrombus, which was sealing off the rupture site, was removed. The diagnosis of LV PsA was confirmed by the absence of myocardial components in the wall (e.g. thinned necrotic myocardium), formed by organized hematoma and pericardial adhesions. Inside the LV cavity, mitral valve was intact, while the posterior papillary muscle appeared normal with hyperemic borders suggestive of recent ischemia injury. Dacron patch was prepared. Interrupted 2-0 Ethibond-pledgetted mattress sutures were placed around the neck of the PsA, then passed through the Dacron patch and tied down (Figure 1A,1B).

In addition, the patient underwent bypass grafting of the left anterior descending artery using left internal mammary artery. The cross-clamp time was 135 min, total cardiopulmonary bypass time was 156 min, and total procedure time was 4 h.



**Figure 1:** Repair of PSA with Dacron patch.



**Figure 2:** Reinforcement of PSA repair with Gore-tex patch.

IABP extract after 52 h. Postoperative echocardiography showed improvement of LV function ( $EF \leq 30\%$ ), mild MR and mild AI. In addition, the Dacron Patch appeared intact with no paradoxical bulging during systole and no flow across (Figure 2). The patient was discharged on 10<sup>th</sup> postoperative day.

## Discussion

Patients with LV PsA commonly present with angina or congestive heart failure symptoms, but can also present with cardiac tamponade [4].

In this case report, the patient presented with dyspnea, while he had no history of cardiac disease before the time of ischemic injury. However, operative findings were suggestive of sub-acute presentation organized thrombus and thickened pericardial tissues sealing off the LV rupture site. In addition, the rupture site edges appeared thickened and scarred. Differentiation between true and pseudo LV aneurysms is crucial for the timing of intervention.

The basic principle of the Dor procedure is to exclude the LV

aneurysmal part with a circular patch to restore the physiological geometry of the LV cavity and to improve its function [5,6]. The two patch techniques may provide an additional benefit over the traditional single layer patch by being less prone to bulging out during systole; hence, they result in better preservation of the LV geometry and function, especially in the early postoperative period. To our knowledge, this is the first reported case of LV PsA repair using two patches. Long-term follow-up is needed to evaluate the effect of the two patch techniques on LV remodeling.

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