

# Left ventricle perforation and pseudoaneurysm with an unusual presentation of a patient with stomachache.



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## Case report

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## Left ventricle perforation and pseudoaneurysm with an unusual presentation of a patient with stomachache. Case report

*A 49-year-old man admitted with a 3 weeks history of stomachache and without any cardiac symptoms and diagnosed as pseudoaneurysm of the left ventricle is reported.*

*The repair was performed with the aid of cardiopulmonary bypass, defect was repaired with Gore-tex patch and myocardial tissues were approximated and closed by using two Teflon stripes. BioGlue was applied on the sutures and between the stripes.*

*We report this unusual case because rarity and high clinical index of suspicion is needed to make correct diagnosis in such patients. Although there is a significantly high mortality of the pseudoaneurysm cases their repair can and should be performed as an urgent procedure.*

KEY WORD: Left ventricle perforation, Pseudoaneurysm, Stomachache.

## Introduction

In case of the rupture of the free wall of the left ventricle enclosed by the surrounding pericardium is called as pseudoaneurysm. Pseudoaneurysm of the left ventricle (LV) is a rare and fatal problem that may occur after an acute myocardial infarction, a trauma or the repair of ventricular aneurysm<sup>1</sup>. These left ventricular pseudoaneurysms (LVPA) are frightening complications because of threatening a fatal rupture. Operative repair of this situation is mandatory, therefore recognition of this rare complication is vital. The pseudoaneurysms usually present with heart failure and they can be classified as postinfarction if arises after myocardial infarction, and

postsurgical when it follows cardiac surgery. The cases diagnosed in two weeks are pointed to as acute, and others as chronic when diagnosed after three months from the event. These aneurysms usually progress asymptotically, which makes it hard to diagnose as in our case who was admitted in our clinic with a stomachache.

## Case report

In this case report we would like to present a patient with LVPA. The patient was admitted to the hospital with stomachache. A 49 year old man had only stomachache for the last 3 weeks and didn't present any symptoms of cardiac angina or chest pain or dyspnoea previously. He didn't have any history of myocardial infarction. Only negative T waves of V1-6 derivations were present on his electrocardiogram. He didn't have any diagnosis or treatment of a cardiac diagnosis. His functional class was NYHA II. Left ventricular aneurysm was diagnosed with transthoracic echocardiography performed during his examination. This transthoracic echocardi-

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gram showed a suspicious lesion on the posterior wall and dyskinetic posterior wall of the left ventricle, with some reduction of the ejection fraction (EF = 40%). An aneurysmatic enlargement was noted in the posterior wall. The patient underwent a coronary angiographic examination and a ventriculography was performed. It showed an enlargement of the left ventricle with a large dyskinetic cavity localized in the diaphragmatic region (Fig. 1). A pseudoaneurysm with multiple loculations at the posterior basal segment (Fig. 2) and also LAD (left anterior descending), Cx (Circumflex) artery lesions were seen in the coronary angiography.

## Operation

The repair was performed via median sternotomy with the aid of cardiopulmonary bypass by using the standard aortic and right atrial cannulation technique.

The pseudoaneurysm was detected on the inferior surface of the left ventricle.

The aneurysm mass consisted of a very thin tissue layer which contains thrombus inside. Soft adhesions were carefully dissected during cardiac arrest period. The pseudoaneurysm cavity was opened (Fig. 3) and thrombotic material was removed.

The pseudo aneurysm was repaired by using endoaneurysmography technique after creating a neck of healthy muscle with 2/0 prolene suture with Gore-tex patch and after the removal of aneurysmatic tissues, healthy myocardial tissues were approximated and closed by using two Teflon stripes in order to reinforce the ventricle (Fig. 4).

BioGlue (biological bovine serum albumin and glutaraldehyde glue) (CryoLife International inc, Kennesaw, GA, USA) was applied on the sutures and on the region between these Teflon stripes.

After these procedures coronary artery bypass grafting with saphenous vein was done to LAD from the aorta. Our patient was well recovered and discharged on the 10<sup>th</sup> postoperative day without any complication.

At the 2<sup>nd</sup> month our patient returned to his normal active life.

In 6 month and 1 year CT controls; no sign of new pseudo aneurysm development was seen.

## Discussion

This case was atypical in its presentation. Although many symptoms such as progressive dyspnea, repeating tachyarrhythmia episodes, thromboembolism, non-specific chest pain can be seen in LV pseudoaneurysms, our patient complained only of stomachache. Besides the presentation's symptoms the localization of the aneurysm was also unusual (10% of all LV aneurysms are located in posterior basal segment). LV pseudoaneurysms can present in various different forms and LVPA must be kept in mind as one of the diagnosis in any cardiac patient.

The most common cause of left ventricular rupture is a transmural myocardial infarction. Rupture of the free wall of the left ventricle sometimes is enclosed by the surrounding pericardium and is called as pseudoaneurysm in the absence of myocardial wall integrity. Pseudoaneurysm of the left ventricle is a rare and fatal



Fig. 1: Left ventriculography. (Arrows indicate the margin of the pseudoaneurysm).

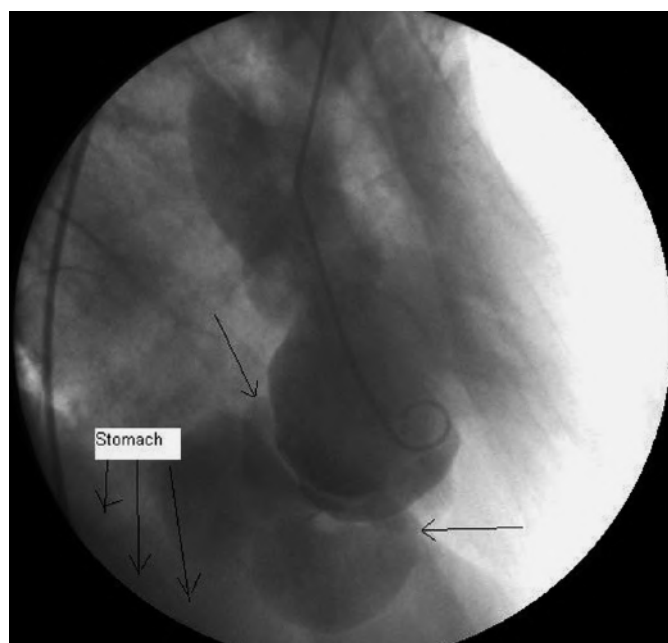


Fig. 2: Left ventriculography. (Arrows indicate the margin of the loculations).



Fig. 3: Operative view of the ruptured myocardium.

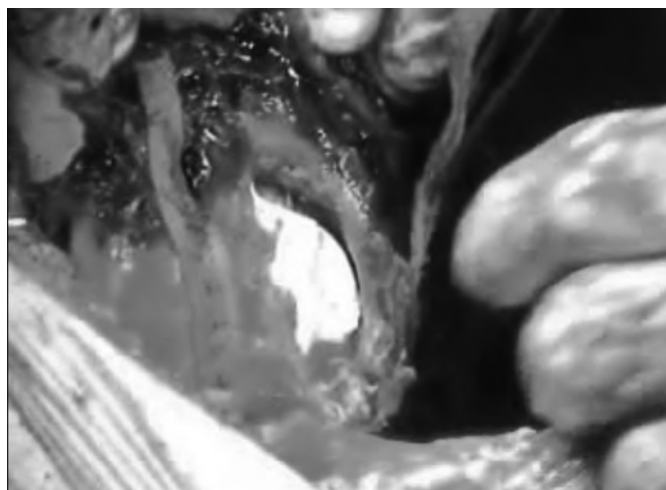


Fig. 4: Repaired ventricle.

problem that may occur after; acute myocardial infarction, trauma, the repair of ventricular aneurysm<sup>1</sup>. These pseudoaneurysms are frightening complications because of threatening fatal rupture. Recognition of this rare complication is vital because operative repair is mandatory. These aneurysms usually progress asymptotically which makes it hard to diagnose as in our case who had admitted our clinic with a stomachache.

Nearly 3% of true aneurysms are found posterior or inferior LV regions. On the contrary LVPAs are mostly located posteroinferiorly<sup>2</sup>. A clinical majority of anterior wall aneurysms can be caused by anterior wall ruptures, generally more fatal than posterior ones. In fact, the pericardium in the posterior wall allows the formation of many pseudo-aneurysms. Also posterior infarcts may be lethal because of the involvement of the papillary muscles and consequent severe mitral valve regurgitation, so that an aneurysm cannot easily arise posteriorly. The more posterior the aneurysm, the more difficult its detection<sup>3</sup>.

LVPAs are clinically uncommon but their diagnosis may be difficult and therefore their rupture often leads to death. Although there is a significantly high mortality of these pseudoaneurysm cases their repair can and should be performed<sup>4</sup>. Urgent surgical procedure must be applied because of the high probability of risk of fatal rupture and sudden cardiac death. The risk of rupture is also higher than the risk of elective surgical operation and repair<sup>5</sup>.

Surgical treatment with coronary artery bypass grafting should be done in patients with LVPA in order to be recovered from cardiac ischemia, and to reduce ventricular volume and to restore its normal geometry. Ventricular volume reduction diminishes wall stress, and thus reduces myocardial oxygen consumption and improves myocardial wall compliance, improves coronary blood flow by reducing ventricular filling pressure.

Thus the systolic shortening of fibers is increased in extent and velocity bringing therefore enhanced con-

tractile performance. Differentiation between aneurysms and pseudo-aneurysm is important in diagnosing and in order to manage correct therapy.

LVPA might progress silently if it forms after heart surgery or myocardial infarction. Also sufficient revascularization must be provided in LV aneurysms, if possible LIMA (left internal mammary artery) should be used because of its tendency to remain open.

## Conclusion

Non-specific chest pain or some unusual clinical findings as in our patient who presented with stomachache can be seen in LV pseudoaneurysm patients. Left ventricular pseudoaneurysms should be repaired urgently in any case and their possibility should be kept in mind in cases of post-cardiac-surgical or post-myocardial-infarct patients.

## Riassunto

Viene presentato il caso di un uomo 49 anni, ricoverato con una storia di mal di stomaco perdurante da 3 settimane e senza sintomi cardiaci, infine diagnosticato come portatore di uno pseudoaneurisma del ventricolo sinistro. La riparazione è stata effettuata in regime di bypass cardiopolmonare, il difetto del miocardio è stato riparato con patch Gore-tex ed i tessuti del miocardio sono stati approssimati e chiusi con due strisce Teflon. Del collante biologico è stato applicato sulle suture e tra le strisce.

La conoscenza di questo caso insolito quanto a rarità ci indica che è necessario un elevato grado di sospetto clinico per effettuare una corretta diagnosi in tali pazienti. Sebbene vi sia un alto tasso di mortalità nei casi di pseudoaneurismi cardiaci, la loro riparazione può e deve essere eseguita con procedura d'urgenza.

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