



## Ventricular Septal Rupture Secondary to Myocardial Infarction Post Fibrinolytic Therapy: A Case Report

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### ABSTRACT

Myocardial infarction can be complicated by Ventricular septal rupture which is a rare fatal grim mechanical complication of MI which is a surgical emergency due to its incredibly high mortality rate. We depict a case of Anterior wall MI which was complicated by Ventricular septal rupture post fibrinolytic therapy.

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### Introduction

Ventricular septal rupture (VSR) is a rare complication of myocardial infarction caused due to laceration of ventricles and atria of the heart and intraarterial and intraventricular septum. It is mainly seen in serious myocardial infarction (MI) (1). Symptoms of myocardial rupture are recurrent chest pain, distension of jugular vein, syncope and sometimes sudden death. The most common cause of VSR is recurrent MI along with cardiogenic shock and severe left ventricular failure (2). Generally recommended therapeutic strategy for VSR post infarction was surgical repair in exclusion of patient's morbidity and mortality rate. The incidence of myocardial rupture has decreased in the era of urgent revascularization and aggressive pharmacological therapy for the treatment of acute myocardial infarction. However, the decrease in the incidence of myocardial rupture is not uniform; there is a slight increase in the incidence of rupture if thrombolytic agents are used for myocardial infarction. Careful monitoring should be done for patients receiving fibrinolytic therapy (3).

### Case report

A 52years old female patient presented to emergency with complaints of chest pain radiating to the neck for

which she was admitted in the hospital. She has a one-week history of mild on and off chest pain with palpitations, her past medical history includes Known case of Type II diabetes with Hypertension. On the day of admission, her Blood Pressure was 150/90mmhg, pulse Rate was 116/min, Respiratory Rate was 30/min, Saturation of peripheral Oxygen was 90% and Ggeneral Random Blood Sugar was 425mg/dl. Her cardiac examination revealed normal heart sounds. Her 2-Dimensional Echocardiogram showed coronary artery disease, Regional wall motion abnormality in Left anterior descending artery, Lateral wall hypokinetic, moderate Left Ventricular dysfunction, Grade I diastolic dysfunction, moderate mitral regurgitation, moderate tricuspid regurgitation and Left ventricular ejection fraction was dropped to 38%. Cardiac biomarker study revealed positive Troponin T. She was diagnosed to have Anterior wall MI and started on Oral dual Antiplatelet therapy and Intravenous fibrinolytic therapy. A repeat 2-Ddimensional Echocardiogram revealed Ventricular septal rupture for which surgical intervention was planned. Meanwhile, Patient's BP was dropped to 90/60mmhg and she developed cardiogenic shock and she was kept on inotropic support with continuous monitoring. Despite above-mentioned measures, unfortunately the patient could not be retrieved and died within a few hours after VSR.

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## Discussion

Ventricular septal rupture is an uncommon catastrophic mechanical complication of acute myocardial infarction which is responsible for most of the in-hospital deaths. In the majority of the cases, VSR is associated with anterior wall myocardial infarction. The VSR secondary to anterior wall MI is typically transmural and extensive. Early reperfusion with thrombolytic therapy i.e. within the first 6 hours of symptom onset may prevent extensive necrosis of the myocardium which decreases the risk of VSR, while late interventions may accelerate VSR development (4). Typically VSR develops within a week post-MI (5). The risk factors for the development of VSR in our patient include arterial hypertension, female sex, and anterior location of infarction and Fibrinolytic therapy. Fibrinolytic therapy has been proven to hasten the development of VSR within 1-2 days of the treatment and women are at greater risk for development of cardiac rupture (5). The early clinical presentations were gastrointestinal symptoms in our patient, she was diagnosed to have VSR lately and the patient died following heart failure and cardiogenic shock. Cardiovascular diseases are associated with Diabetes and Hypertension, the risk for coronary artery disease raises gradually with incremental rise in blood pressure above the normal & in diabetes mellitus insulin resistance and hyperglycaemia are associated with cardiovascular diseases. Diabetic patients often have coronary perfusion abnormalities and myocardial damage. The method for diagnosis of VSR mostly used is Echocardiography (6). The most effective treatment is to institute hemodynamic stabilization with medications, fluids use of mechanical hemodynamic support with Intraaortic balloon pump counterpulsation and finally elective surgical repair. Transcatheter closure of ruptured ventricular septum is also a useful nonsurgical intervention in patients for those surgical interventions are contraindicated (7). In this case, only hemodynamic support with medications was provided to the patient and emergent surgical intervention was not made which made worsening of the complications and finally lead to the death of the patient.

In conclusion, early diagnosis of the grave mechanical complication of acute myocardial infarction through prompt 2-dimensional echocardiography is necessary to reduce mortality and morbidity associated with ventricular septal rupture through timely surgical or nonsurgical interventions. Patients receiving fibrinolytic therapy post myocardial infarction should be carefully monitored for cardiac rupture.

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