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## Case Report

# Postoperative diffuse coronary spasm after two valve surgery – A rare phenomenon



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## ABSTRACT

Postoperative coronary artery spasm is one of the grave complications of cardiac surgery and is usually seen in patients undergoing coronary artery bypass surgery. We describe the case of a 63 year old male patient developing postoperative spasm of the entire coronary tree after aortic & mitral valve replacement, manifesting as significant electrocardiographic changes. Urgent coronary angiography was performed which revealed diffuse spasm of the entire coronary tree. It resolved completely with intracoronary injection of Nitroglycerine. The present case highlights the likelihood of postoperative coronary spasm even after valve replacement surgery, and not just coronary bypass surgery. It also illustrated the usefulness of coronary angiography for both diagnosis and treatment of this entity.

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## 1. Introduction

Postoperative coronary artery spasm is a potentially life-threatening complication of cardiac surgery. Most published cases document this complication following coronary artery bypass surgery<sup>1</sup> and its occurrence after valve replacement surgery is uncommon.<sup>2,3</sup> We describe the case of a patient developing postoperative spasm of the entire coronary tree after aortic & mitral valve replacement surgery.

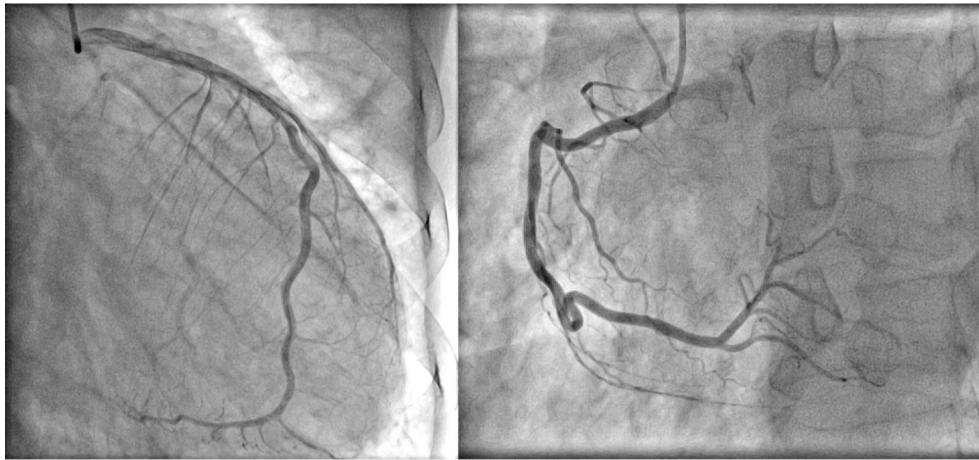
## 2. Case report

A 63-year-old male patient was admitted with complaints of dyspnea on exertion, orthopnea and palpitations of 2 years duration which had increased for last 6 months. Transthoracic echocardiography showed rheumatic heart disease, severe mitral regurgitation and severe aortic regurgitation. Preoperative coronary angiography revealed normal coronary arteries (Fig. 1). Double valve replacement surgery was done using 25-

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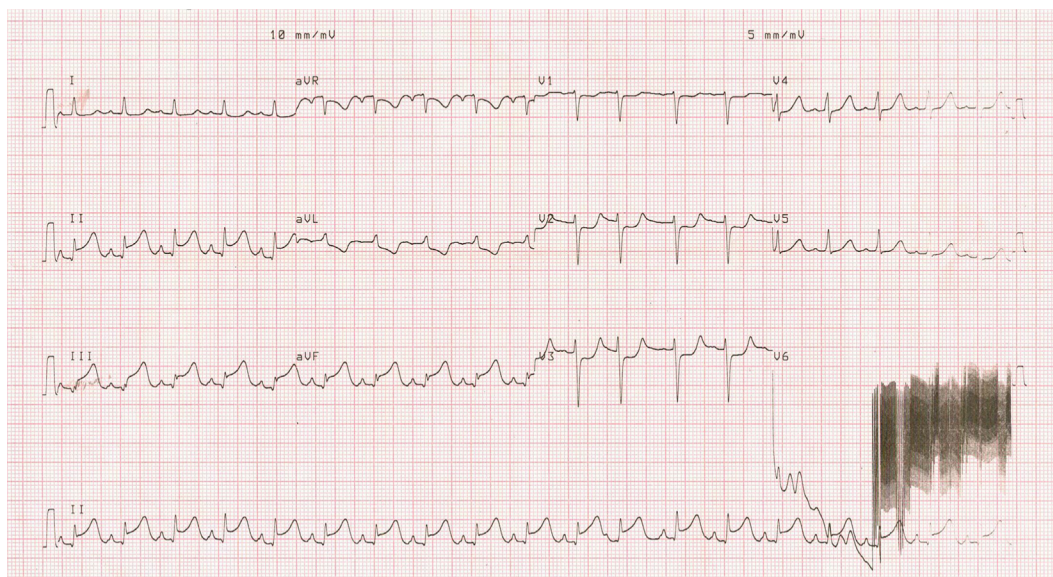


**Fig. 1 – Preoperative coronary angiogram images revealing normal coronary arteries.**

mm SJM mechanical prosthesis (St. Jude Medical, St. Paul, MN, USA) for mitral valve through trans-septal approach (with posterior mitral leaflet preservation) and 21-mm SJM mechanical prosthesis for aortic valve. A routine cardiopulmonary bypass using aorto-bicaval cannulation was used. The myocardial protection strategy involved was mild systemic hypothermia (32°) and direct ostial cardioplegia (in view of severe aortic regurgitation). The cardioplegia solution used was cold sanguineous cardioplegia (4:1 dilution) at around 6–7 °C (Saint Thomas solution II) and was repeated every 15 min. First dose had 25 mEq/kg of potassium (K) and subsequent dose 15 mEq/kg of K.

The intraoperative course was uneventful and patient was shifted to Cardiac Intensive care unit with minimal inotropic support. After about 4 h, patient developed significant electrocardiogram (ECG) changes of ST segment elevation in inferior limb leads with reciprocal changes in anterior chest

leads (Fig. 2). Nitroglycerine infusion and increase in inotropes didn't help. Patient was maintaining stable hemodynamics on minimal inotropic support. A bedside echocardiogram revealed normally functioning prosthetic valves and hypokinesia of inferior wall of left ventricle (LV). Cardiac enzyme biomarkers test was not done due to significant ECG changes & correlating echo findings. In this emergent situation, it was decided to get an urgent coronary angiogram before patient developed hemodynamic instability. Patient was transferred to the catheterization lab and angiogram revealed severe spasm of the right coronary (RCA) and left anterior descending (LAD) arteries (Fig. 3). Intracoronary injection of Nitroglycerine (100 mics) resulted in immediate amelioration of the spasm (Fig. 4) and resolution of the electrocardiographic changes (Fig. 5). Diltiazem infusion was started. Patient was extubated next day morning and switched over to oral Diltiazem. Further postoperative course was uneventful.



**Fig. 2 – ECG showing ST segment changes in inferior limb leads with reciprocal changes in chest leads.**

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