# ACUTE POSTERIOR MYOCARDIAL INFARCTION WITH PAPILLARY MUSCLE RUPTURE

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## INTRODUCTION

- Rupture of the papillary muscle is one of the rare complications of posterior wall myocardial infarction (PWMI) associated with increased mortality (30-95%).  
- Earlier cases reported that both anterior and posterior papillary muscles may rupture, but most commonly posterior, usually from the occlusion of postero-ventricular branch or distal posterior descending artery of the dominant right coronary artery. In patients with acute pulmonary edema with papillary muscle rupture, no improvement was observed with revascularization alone.  
- We describe a patient with an acute posterior wall MI complicated by papillary muscle rupture which resulted in sudden death in spite of prompt resuscitative measures leaving no time for surgery.

## CASE DESCRIPTION

A 32-year-old male presented with chest pain that occurred at rest on the day of admission. This chest pain was substernal, pressure like, non-radiating, moderate in intensity, not associated with diaphoresis or shortness of breath and spontaneously dissipated after 15 to 30 minutes. He denied tobacco or cocaine use. His vital signs were stable at presentation. Electrocardiogram (EKG) revealed a normal sinus rhythm. He had normal heart tones with a localized 2-3/6 pansystolic murmur at the apex. Aspirin 325 mg daily was administered orally. Initial laboratory studies including a drug screen were unremarkable. A 2D-echocardiogram with Doppler demonstrated a prolapsed anterior mitral leaflet with moderately severe eccentrically directed mitral regurgitation. While being evaluated, the patient developed sudden onset severe substernal chest pain with new ST depressions in the anterior leads consistent with a posterior myocardial infarction. Emergent coronary angiography revealed subtotal occlusion of mid to distal right coronary artery suggestive of intracoronary thrombus and he underwent a stenting procedure. However, the patient continued to have chest pain and suddenly developed respiratory distress with oxygen saturation decreasing to 78% on 2L nasal oxygen. Physical exam revealed diffuse bilateral crackles consistent with acute pulmonary edema, confirmed by fluoroscopy. Following emergent intubation, he became pulseless.  

## DISCUSSION

- Papillary muscle rupture is a rare but generally fatal mechanical complication of acute myocardial infarction. Papillary muscle rupture occurs in less than 5% of all transmural infarctions and conveys a mortality rate of 30-95%.  
- Both anterior and posterior papillary muscles may rupture, but posterior papillary muscle is more common. Posterior papillary muscle damage usually occurs due to occlusion of distal posterior descending artery or posterior-ventricular branch of the dominant right coronary artery.  
- In the present case, a recent thrombotic occlusion of a dominant right coronary artery resulted in myocardial infarction involving the posterior wall of the left ventricle and the base of the papillary muscle and in its rupture. The sudden occurrence of mitral incompetence led to fatal pulmonary edema. In patients with acute pulmonary edema with mitral valve rupture, no improvement was observed with revascularization alone.  


- Prompt diagnosis and aggressive surgical therapy for patients who develop posterior papillary muscle rupture after myocardial infarction may be beneficial.

## CONCLUSIONS

- Papillary muscle rupture is one of the rare but generally fatal mechanical complication of acute myocardial infarction.  
- Prompt diagnosis and aggressive surgical therapy for patients who develop posterior papillary muscle rupture after myocardial infarction may be beneficial.

## REFERENCES


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**METHODS**

- After the index case was identified, a thorough literature search was performed using PUBMED and MEDLINE databases. We have identified 10 articles that met the criteria of Acute posterior wall myocardial infarction complications and Papillary muscle rupture. Appropriate literature was cited in this poster.  

**IMAGES & GRAPHS**

Figure 1. Presentation EKG of the 36 year old male  
Figure 2. EKG of same patient with severe substernal chest pain  
Figure 3. Echocardiogram showing mitral valve prolapse (anterior leaflet) with regurgitation  
Figure 4. Angiogram showing right coronary artery occlusion