

# Unusual Case of Acute Posteromedial Papillary Muscle Rupture After Acute Anterior Myocardial Infarction

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Papillary muscle rupture is now a rare complication of acute myocardial infarction. Posteromedial papillary muscle rupture is more common than anterolateral papillary muscle rupture. The posteromedial papillary muscle is usually supplied from a branch of the right coronary artery. We present a case of posteromedial papillary muscle rupture due to an isolated left anterior descending artery lesion. This was diagnosed on the fifth day post infarction. The patient progressed to mitral valve replacement and coronary artery bypass grafting to the left anterior descending artery. We believe this unusual arterial supply to the posteromedial papillary muscle is due to an apex forming left anterior descending artery coupled with an apically located posteromedial papillary muscle.

## Keywords

Papillary muscle rupture • Mitral valve • Myocardial infarction • Coronary artery bypass grafting • Left anterior descending artery

## Background

Papillary muscle involvement with myocardial ischaemia involves prolapse, restriction and rupture [1]; rupture affects 0.5–5% of patients with AMI [2].

The posteromedial papillary muscle has predominantly single blood supply from the posterior descending artery (PDA) branch of a dominant right coronary artery (RCA) or as a branch from the dominant circumflex (Cx) coronary artery. The anterolateral muscle has dual blood supply – typically from the first marginal from the circumflex and the first diagonal from the left anterior descending artery (LAD) [1–5].

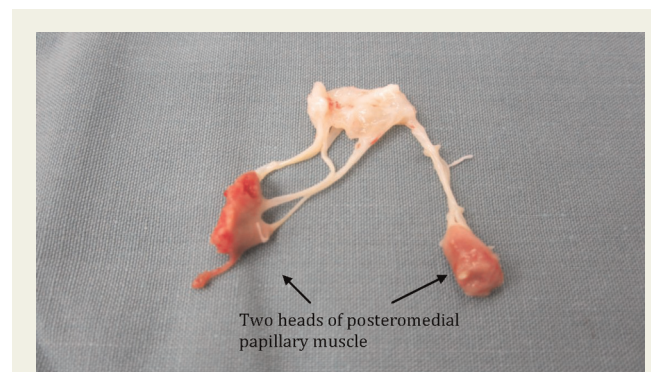
We describe a case of isolated LAD stenotic disease with PMR.

## Case Report

A 65 year-old male presented to a regional hospital in cardiogenic shock, five days after an episode of chest pain.

He had no cardiovascular risk factors, only being an ex-smoker.

A transoesophageal echocardiogram revealed severe mitral regurgitation with a flail posterior mitral valve leaflet



**Figure 1** Operative specimen ruptured posteromedial papillary muscle.

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**Table 1** Review of Literature of All Cases of Papillary Muscle Rupture and Arterial Territory Involved.

Article	Case	Papillary muscle			Arterial territory		
		Anterolateral	Posteromedial	Both	1 vessel disease	2 vessel disease	3 vessel disease
J Cardiothorac Surg 2012; 7:75	63 M chest pain, dyspnoea, weakness	1			Distal RCA		
Ann Intern Med 1979; 90: 149–152	13 patients John Hopkins autopsy specimens	2	11		RCA 4 Cx and 7 RCA		
Am J Cardiol 1983; 51: 373–377	17 patients from Mayo Clinic 1939–1981 with ischaemic papillary muscle rupture	1	8		2RCA (1 = T) 2Cx (1 = T)	3	1
Cases Journal 2008; 1: 172	42M congestive cardiac failure	1				1	
Am J Case Rep 2013; 14: 38–42	51M shortness of breath 73M chest tightness PMHx CABG		1				1
J Am Coll Cardiol 1986; 8: 558–565	22 patients at necropsy (2 previously described)	6	14		1 1	2 4	1 5
Eur Heart J 1997; 18: 1606–1610	25 patients, Spain 1997	NS			17 RCA 8 Cx		
Dis Chest 1957; 31: 316–323	5 patient series, Denver 1957	1	4		Cx 3 RCA and 1 LCA Cx		
Ann Thorac Cardiovasc Surg 2011; 17(1): 81–85	77 yo cardiogenic shock	1					
Circulation 2011; 123: 1044–1045	86F cardiogenic shock		1		Mid RCA		
Rev Port Cardiol 2013; 32 (3): 243–246	59M chest pain	1				1	
Circ J 2002; 66: 872–873	70M cardiogenic shock	1			Proximal 1st diagonal		
A Jnl. of CV Ultrasound & Allied Tech 2000; 17:6 577–578	60M congestive cardiac failrue		1				1
Cardiovasc Pathol 2005; 14: 251–255	63M acute myocardial infarction 72F 3/7 post thrombolysis for acute myocardial infarction 58M cardiogenic shock			1			1
Int J Cardiol 2011; 147: S135–S136	54M chest pain, Acute pulmonary oedema	1					1
Eur J Echocardiogr 2011; 12: E10	54F resp failure Acute pulmonary oedema	1			Cx with emboli		
Am J Cardiol 1992; 70: 277–280	Mount Sinai Hospital 1983–1989	1	4		1		4

NS, not specified; T, thrombus.

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