

# Myocardial Bridge at Posterolateral Coronary Artery: Case Report

## Posterolateral Koroner Arterde Kas Bandı

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**ABSTRACT** The myocardial bridge is a segment of epicardial coronary artery that is covered by myocardial tissue, and it is responsible for the narrowing of the artery at each systolic contraction. Almost all of the bridges involve in the left anterior descending coronary artery and they are very rarely seen in the other coronary localizations. The clinical consequence of myocardial bridges varies, and most patients are asymptomatic. However, angina, ventricular fibrillation, cardiac arrhythmias, and sudden death have been reported in association with myocardial bridges. We reported a 67 year-old female presenting with acute coronary syndrome and her angiography, that was demonstrated a 80% systolic narrowing of a large posterolateral branch of the right coronary artery in addition to multiple atherosclerotic lesions and treatment approach.

**Key Words:** Myocardial bridging; coronary vessels; acute coronary syndrome

**ÖZET** Kas bandı, epikardiyal koroner arterin bir segmentinin miyokard dokusu altında seyretmesidir ve bu durum her sistolik kasılma esnasında koroner arterde daralmaya yol açabilmektedir. Koroner kas bantlarının tamamına yakın kısmı sol ön inen arterde gözlenirken, nadir olarak diğer koroner lokalizasyonlarda da izlenebilmektedir. Klinik bulgular değişken olup, çoğu hasta asemptomatiktir. Ancak kas bandıyla ilişkili anjina, ventriküler fibrilasyon, kardiyak aritmiler ve ani kardiyak ölüm vakaları bildirilmiştir. Bu yazıda akut koroner sendrom kliniğiyle başvuran 67 yaşındaki bir kadın olgunun koroner anjiyografisindeki çoklu aterosklerotik lezyonlar eşliğinde saptanan, sağ koroner arterin posterolateral dalında sistolde %80 daralma yapan kas bandı ve tedavi yaklaşımı sunuldu.

**Anahtar Kelimeler:** Miyokardiyal köprüleşme; koroner damarlar; akut koroner sendrom

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Coronary arteries and their major branches are usually located sub-epicardially. The myocardial bridge (MB) is a segment of epicardial coronary artery that is covered by myocardial tissue, and it is responsible for the narrowing of the artery at each systolic contraction. MB is found in approximately 10% of all coronary angiography procedures. Almost all of the bridges involve in the left anterior descending coronary artery (LAD) and they are very rarely seen in right coronary artery (RCA).<sup>1,2</sup> Muscle bridges are more common in men than in women and tend to affect patients in their fourth decade of life.<sup>3</sup> The clinical significance of myocar-

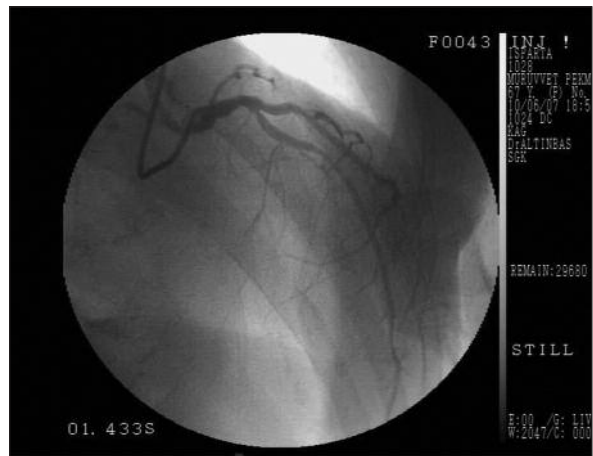
dial bridges varies, and most patients are asymptomatic. However, angina, ventricular fibrillation, cardiac arrhythmias, and sudden death have been reported in association with myocardial bridges.<sup>4</sup>

To the best of our knowledge there is only one case of MB of the posterolateral branch of RCA<sup>2</sup> in the literature. We intend to report the case of a MB with an uncommon anatomical presentation.

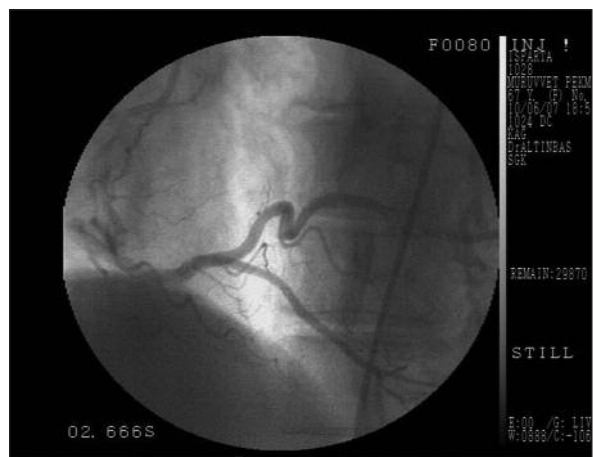
## CASE REPORT

A 67-year-old woman was admitted to our emergency department with dyspnea and exertional chest pain. She had experienced shortness of breath and chest pain with effort for about eight years. She was a non-smoker. She had a family history of coronary artery disease, hypertension and diabetes mellitus type 2. Her systolic and diastolic blood pressures were 150 and 70 mmHg respectively. Heart rate was 130 b.p.m. A severe early diastolic murmur at the left lateral sternal border and a mild midsystolic murmur at apex was detected. Electrocardiography (ECG) showed sinus rhythm with the signs of left ventricular hypertrophy and left bundle branch block. Two-dimensional transthoracic echocardiography (GE-VingMed Sound AB, Horten, Norway) demonstrated a trileaflet aortic valve with severe aortic regurgitation and eccentric mild mitral regurgitation.

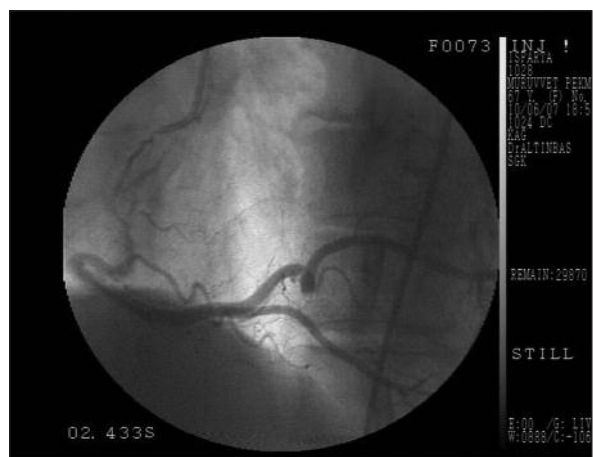
Coronary angiography, which was performed because of severe aortic regurgitation and the ongoing ECG changes. It demonstrated an eccentric 30% stenosis at the distal segment of left main coronary, proximal 80% stenosis at LAD and the first diagonal branch of LAD (Figure 1), a 40% stenosis at first obtus margin branch of circumflex artery and a 80% systolic narrowing of a large posterolateral (PL) branch of the RCA (Figure 2) and normal diastolic flow on PL (Figure 3). In addition aortography showed severe aortic regurgitation to left ventricle during diastole (Figure 4). Thus we referred the patient to the cardiovascular surgery for coronary artery bypass graft surgery (CABG), aortic valve replacement (AVR) and surgical treatment of MB.



**FIGURE 1:** A 30% stenosis at the distal segment of left main coronary, proximal 80% stenosis at LAD and the first diagonal branch of LAD. LAD: Left anterior descending coronary.



**FIGURE 2:** A 80% systolic narrowing of a large PL branch of the RCA. PL: Posterolateral coronary, RCA: right coronary.



**FIGURE 3:** Normal diastolic flow on PL. PL: Posterolateral coronary.

## DISCUSSION

MB is usually an innocent pathology. Bridging of the epicardial coronary arteries has been described only in association with the left ventricular myocardium and most commonly with the LAD.<sup>5</sup> In the most of cases bridging has no hemodynamic affect, but if systolic narrowing is very severe or if tachycardia is present, ischemia can occur.<sup>6,7</sup> In addition myocardial infarction, left ventricular dysfunction, paroxysmal atrioventricular block, as well as exercise-induced ventricular tachycardia and sudden cardiac death have been reported to be related to a myocardial bridge.<sup>8</sup> Beta-blockers are the suggested medical treatment. They prolong the diastolic time and decrease the contraction force above the coronary artery.<sup>9</sup> Intracoronary stents and surgery have been attempted in patients refractory to medication.<sup>10</sup> Thus we referred our pa-

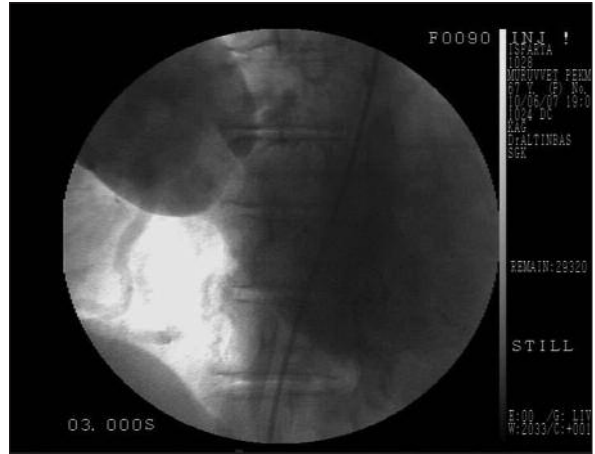


FIGURE 4: Severe aortic regurgitation to left ventricle during diastole.

tient to cardiovascular surgery for concurrent treatment of CABG, AVR and surgical treatment of MB.

In conclusion, MB can be seen at uncommon localizations such as posterolateral branch of RCA.

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