

## Severe Myocardial Ischemia Caused by Muscular Bridge of the Diagonal Branch of the Left Anterior Descending Coronary Artery

*Birinci Diyagonal Arter'deki Kas Bandına Bağlı Olarak Ortaya Çıkan Ciddi Miyokard İskemisi*

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A muscular bridge is found in 10% of all coronary angiography procedures. Almost all of the bridges involve the left anterior descending coronary artery (LAD) and they are very rarely seen in the diagonal artery (1).

In our patient, coronary angiography revealed a muscular bridge of the first diagonal branch of the LAD. After reviewing the literature we did not find any reports of a muscular bridge of the diagonal artery causing ischemia, and we decided to report this case.

A 70-year-old female was admitted to our emergency department with exercise-induced chest pain. Physical examination was normal, blood pressure was 130/70 mmHg and heart rate was 70 bpm and regular. Electrocardiogram (ECG) obtained during the chest pain revealed ST segment depressions and inverted T waves in precordial and inferior leads and couplet ventricular premature contractions (Fig. 1). Since the ECG changes and symptoms were indicative of myocardial ischemia the patient was hospitalized. The patient had none of the major risk factors for coronary artery disease. Blood count, biochemical parameters including cardiac enzymes and troponin, and chest X-ray all were normal. Echocardiography was normal. Coronary angiography, which was per-

formed because of the ongoing ST-T changes, demonstrated a normal left main, circumflex, right and left anterior descending coronary arteries and a 80% systolic narrowing of a large first diagonal branch of the LAD (Fig. 2 a, b).

Bridging of the epicardial coronary arteries has been described only in association with the left ventricular myocardium and most commonly with the LAD (2). 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 (3). Although our patient had ischemic symptoms and there were ECG signs of ischemia, we did not perform any interventional therapy but started medical therapy since interventional therapy in this condition may be risky; balloon angioplasty and stent implantation at the bridge segment may be complicated by coronary artery perforation due to balloon oversizing (4). Moreover, she had symptoms only with exercise. Thus, in order to take advantage of the negative inotropic and sympatholytic affects, we commenced a beta-blocker (5). In the follow-up visits the patient felt well and had no complaints.

In conclusion, myocardial ischemia can be caused by a muscular bridge over the diagonal artery.

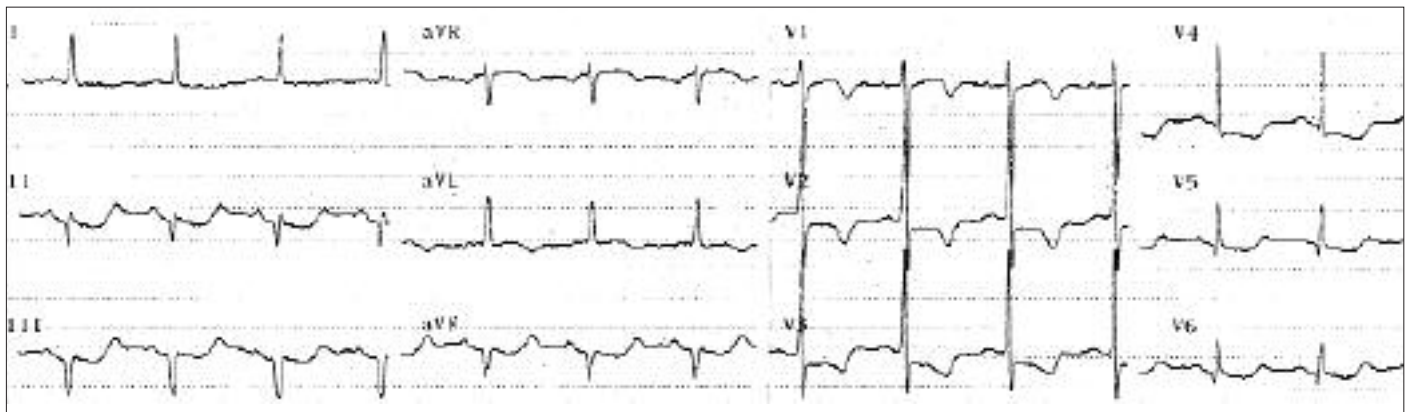


Figure 1. Electrocardiogram of the patient showing ST depressions and inverted T waves in precordial and inferior leads.

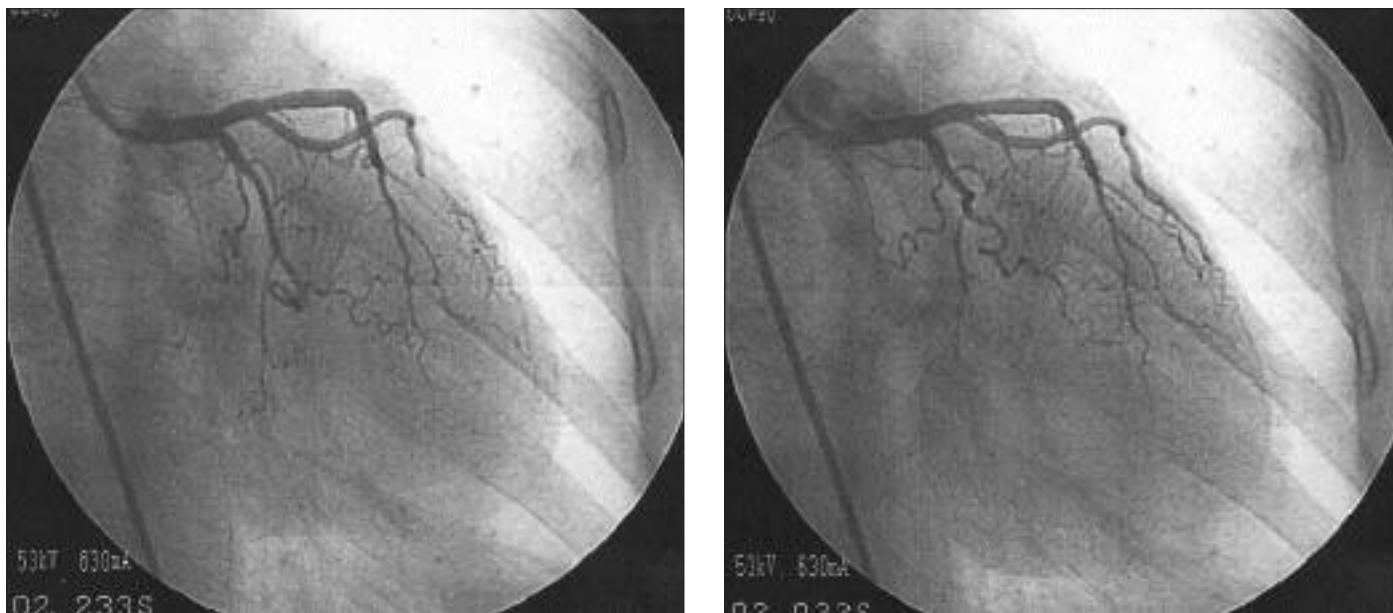


Figure 2. Right anterior oblique view (selective coronary angiography) of the left coronary artery system during systole (a) and diastole (b).

## References

1. Kramer JR, Kitazume H, Proudfit WL, Sones FM Jr. Clinical significance of isolated coronary bridges: Benign and frequent condition involving the left anterior descending coronary artery. *Am Heart J* 1982; 103:282-6.
2. Dominguez B, Valderrama V, Arrocha R, Lombana B. Myocardial bridging as a cause of coronary insufficiency. *Rev Med Panama* 1992; 17:28-35.
3. Popma JJ, Bittle J. Coronary angiography and intravascular ultrasonography. In: Braunwald E, Zipes DP, Libby P, editors. *Heart Disease: A Textbook of Cardiovascular medicine*. Pennsylvania: WB Saunders Co; 2002. p.387-421.
4. Hering D, Horstkotte D, Schwimmbeck P, Piper C, Bilger J, Schultheiss HP. Acute myocardial infarct caused by a muscular bridge of the anterior interventricular ramus: complicated course with vascular perforation after stent implantation. *Z Cardiol* 1997; 86: 630-8.
5. Ortega-Carnicer J, Fernandez-Medina V. Impending acute myocardial infarction during severe exercise associated with a myocardial bridge. *J Electrocardiol* 1999; 32: 285-8.