



## Posterolateral Branch of Circumflex Artery: An Extremely Rare Location for Myocardial Bridging

CASE REPORT

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ABSTRACT

Myocardial bridging is a rare congenital coronary artery abnormality in which the epicardial coronary artery is covered by myocardial muscle tissue at a distance during its course. Myocardial infarction, ventricular arrhythmias, and sudden cardiac death have been associated with myocardial bridging. While myocardial bridges are usually located on the left anterior descending artery, left circumflex artery involvement is reported in a few cases. Here, we present a patient admitted to the coronary care unit with unstable angina pectoris having multivessel coronary artery disease and myocardial bridging on the posterolateral branch of the left circumflex artery, for the first time.

Key words: Myocardial bridging, acute coronary syndrome, left circumflex coronary artery

### INTRODUCTION

Myocardial bridging (MB) is a congenital coronary abnormality of coronary arteries characterized with myocardial fibers crossing over the epicardial coronary artery during its course. The prevalence of MB is 0.4% to 5.4% on coronary angiography and is usually located on the left anterior descending artery (LAD) (1-2). The left circumflex artery (LCX) is rarely involved in myocardial bridging (3-4). In this report, we present an extremely rare kind of obstructive myocardial bridging, which was located on the posterolateral branch of the LCX artery.

### CASE REPORT

A 65-year-old man was presented to the emergency department with retrosternal chest pain ongoing for 2 hours. His medical history was clear except for smoking and hypertension. Elevated systolic blood pressure (155 mm Hg) and tachycardia (106/min) were prominent findings on his physical examination. Electrocardiogram revealed poor R wave progression and Q wave on leads V<sub>1</sub> to V<sub>4</sub> and ST-T segment changes on leads V<sub>4</sub> to V<sub>6</sub> (Figure 1). Cardiac troponin I was 1.04 ng/mL, and CK-MB was 15 U/L in blood tests. The patient was then hospitalized with a non-ST segment elevation myocardial infarction diagnosis. Subsequently, coronary angiography was performed to see the coronary anatomy. The patient's informed consent was taken before the procedure. The right coronary angiogram showed total occlusion of the right coronary artery, and the left coronary angiogram showed 90% stenosis in the proximal left anterior descending coronary artery, 90% stenosis in the mid-circumflex artery, and MB causing 99% systolic occlusion of the posterolateral segment of the LCX, which recovered during diastole (Figure 2-3). We decided on coronary artery by-pass grafting as the most suitable revascularization option for this patient and rapidly transferred him to the cardiovascular surgery department for CABG. Internal mammary artery to the LAD and saphenous grafts to the RCA and obtuse branch of the LCX were performed successfully. The post-operative period until discharge was uneventful.

### DISCUSSION

Myocardial bridging is usually defined as coverage of a coronary artery segment by myocardial tissue during its epicardial course (5). The prevalence of MB varies high between angiographic and autopsy series, being 0.4% to 5.4% in angiographic series and 15% to 85% in autopsy series (1). The left anterior descending artery is involved in the majority of cases. Involvement of the LCX and RCA is extremely rare. Although recognized as a benign coronary artery abnormality, MB has the potential for myocardial infarction, ventricular arrhythmias, and sudden cardiac death by obstructing coronary flow during ventricular systole (6). Therefore, care should be taken in the treatment and follow-up of patients with MB.

Potential therapeutic strategies are drug therapy with beta-blockers and calcium channel-blockers, PCI, and surgery, including myotomy or CABG. Interventional and surgical treatment strategies are usually reserved for symp-

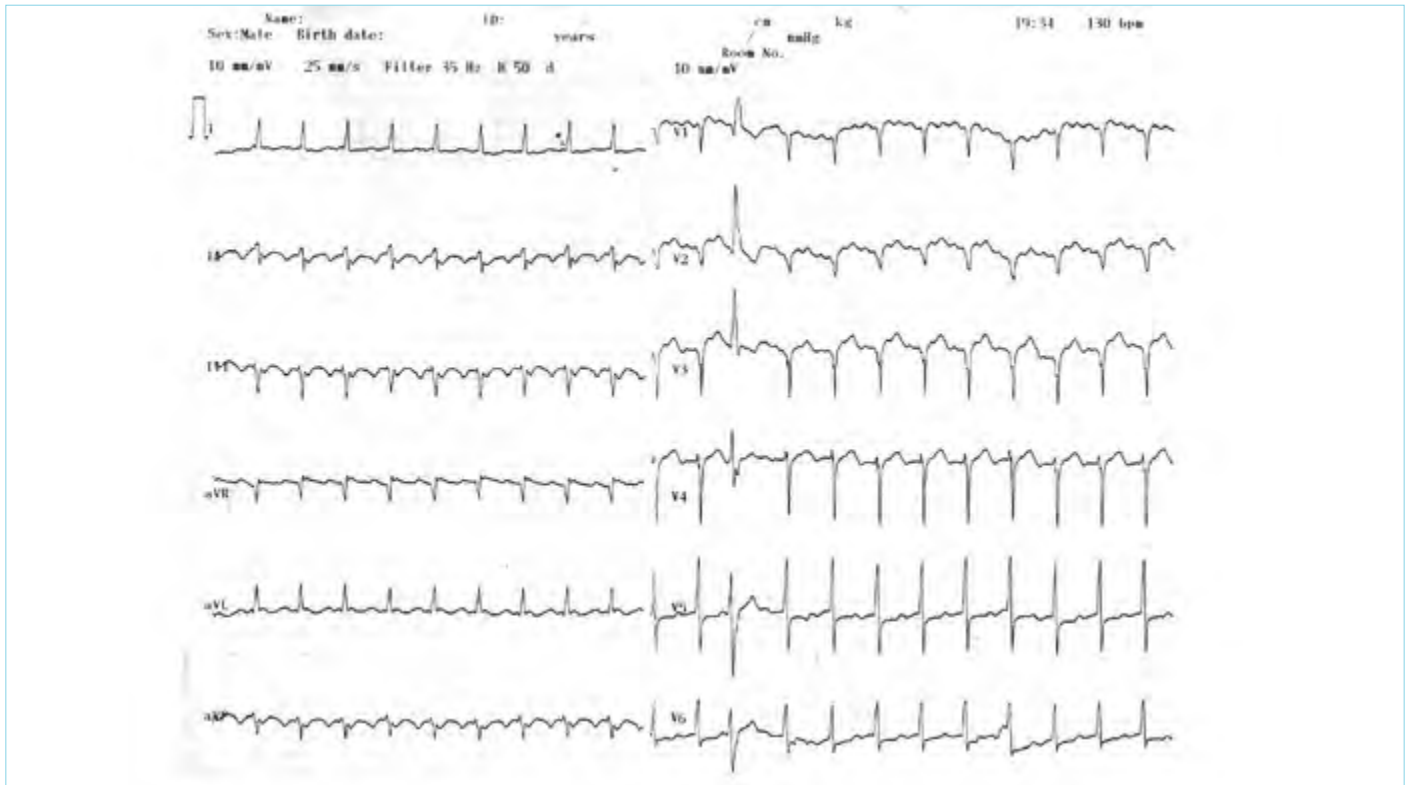
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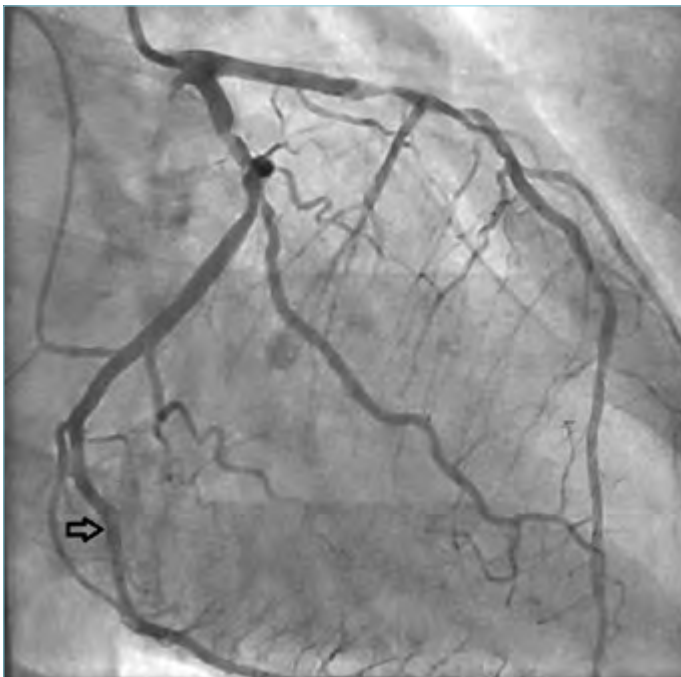
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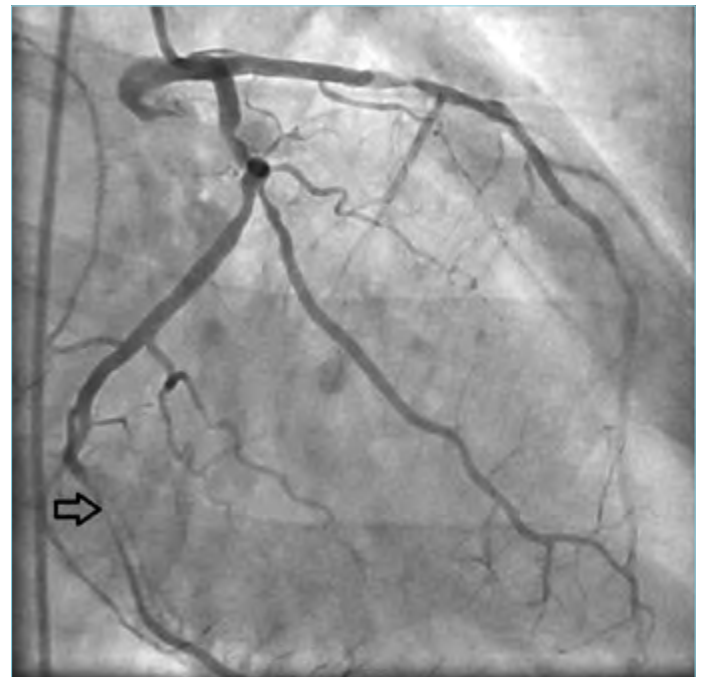
**Figure 1.** Electrocardiogram showing Q waves in leads V1 to V4 and ST-T segment changes in leads V4 to V6



**Figure 2.** Posterolateral branch of left circumflex artery is compressed by muscle band during systole

tomatic patients despite optimal drug therapy with beta-blockers and severe coronary artery disease, which is more suitable for treatment with by-pass grafting.

To the best of our knowledge, this is the first report of myocardial bridging on the posterolateral branch of the LCX artery (distal



**Figure 3.** Systolic compression of muscle band resolves during diastole

portion) related with non-ST myocardial infarction. Previously, MB involving the proximal and mid-LCX artery was reported (3, 4). However, MB involving the posterolateral branch of the LCX artery was not reported previously. In this case, the coronary anatomy was suitable for by-pass grafting; accordingly, the patient was treated with CABG to the distal segment of muscular bridge. Al-

though CABG and percutaneous intervention are potential treatment strategies, these are reserved for patients having symptoms despite beta-blocker treatment. However, it should be kept in mind that medical treatment is sufficient for relieving symptoms in most patients.

## CONCLUSION

Myocardial bridging is a serious coronary artery anomaly that may even lead to death. Although MB is usually located on the LAD, it should be kept in mind that in rare cases, the LCX and RCA may also be involved. In this report, we present an extremely rare location of MB on the posterolateral branch of the LCX.

**Informed Consent:** Written informed consent was obtained from patient who participated in this study.

**Peer-review:** Externally peer-reviewed.

**Authors' Contributions:** Conceived and designed the experiments or case: BŞ, ŞK. Performed the experiments or case: AB. Analyzed the data: AB. Wrote the paper: BŞ, ŞK. All authors read and approved the final manuscript.

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