



MYOCARDIAL BRIDGE PRESENT IN TWO CORONARY ARTERIES CONCOMITANTLY AND TREATED SURGICALLY: A CASE REPORT

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| <p>Article Info Received 30/07/2015 Revised 27/08/2015 Accepted 02/09/2015</p> <p>Key words: Myocardial Bridge, Myotomy, Coronary Bypass.</p> | <p>ABSTRACT Myocardial bridging (MB) is a rare congenital anomaly of the coronary artery. It involves symptoms of myocardial ischemia by causing various levels of narrowing in the coronary artery during systole at every heart contraction. In the literature MB is generally described in a single artery, in the left anterior descending artery (LAD). MB in other arteries or in more than one artery in the same patient is very rare. In our case, MB was determined in both the LAD and the left circumflex (CX) artery. Clinical status failed to improve despite anti-ischemic and anti-aggregant treatment, and the patient was scheduled for surgery. Coronary bypass and myectomy were performed using the cardiopulmonary bypass method. Surgery is a method that can be safely applied in selected cases of MB.</p> |
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INTRODUCTION

MB is a congenital cardiac anomaly. It was first described at autopsy by Reyman in 1737 [1]. It was first shown with coronary angiography by Portman and Iwig in 1960 [2]. Incidences vary, and are reported at between 1.5% and 16% in angiographic series [3]. However, higher levels have been determined in autopsy series [4, 5]. The part of the epicardial coronary artery inside the relevant muscle segment narrows to varying extents with each systole, while the coronary artery dilates completely at diastole. MB is most common in the LAD, but may also be seen more rarely in the right coronary and CX arteries. Concurrent MB in two arteries is very rare [6]. A limited number of cases have been reported in the literature. While many publications have described MB in the LAD, there have been few reports of isolated MB in the RCA and CX.

CASE REPORT

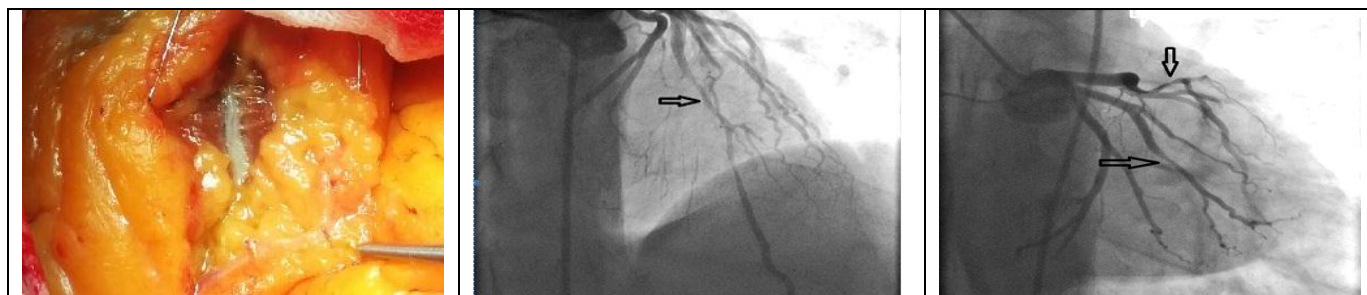
A 41-year-old man presented to our clinic with chest pain and respiratory difficulty during effort. The

patient reported that the symptoms had persisted for 1 year but had worsened in the preceding 2 months. Physical examination was normal. Electrocardiography (ECG) revealed ST change in anterior deviations. Left ventricular functions were normal at ECG, and no pathological finding was observed. A history of coronary bypass performed following detection of muscular bridge in the left anterior descending artery (LAD) in a 36-year-old brother 8 months previously was present as a risk factor. The patient exhibited typical symptoms, positive ECG findings and a family history, and coronary angiography was performed. Long MB was identified in the middle segment of the LAD and in the short segment of the left circumflex (CX) artery. Almost total narrowing was observed in both vessels during ventricular systole (Figures 1,2). The patient was started on iv beta blocker therapy. Heparin infusion was also initiated as an anti-aggregant. Surgery was scheduled when no change in chest pain or ECG was observed despite medical treatment. Once diastolic arrest had been



achieved using an aortic cross clamp following cardiopulmonary bypass, the CX artery was located and the saphenous vein and coronary artery were anastomosed to the distal part of the bridge region. The LAD was then freed by performing hypertrophic muscle tissue myotomy from the distal end of the LAD to the proximal part. (Figure 3) Since the released middle LAD segment was observed to contain plaque, distal anastomosis of the

saphenous vein and LAD was performed. Following proximal bypasses to the ascending aorta, the cross clamp was removed and cardiopulmonary bypass was concluded without complications. The patient was extubated on the 3rd hour postoperatively and removed from intensive care on the 1st day. He was discharged in a healthy condition on the 4th day.



DISCUSSION AND CONCLUSION

Arjomand *et al.* first described MB in the CX artery [7]. Deroa *et al.* described muscular bridge isolated in the CX artery [8]. Oztürk *et al.* described a case of MB in both LAD and CX [9]. The degree of myocardial ischemia caused by MB depends on its location, depth and length. The condition can lead to fatal complications, such as angina pectoris, acute coronary syndrome, serious ventricular arrhythmias or ventricular rupture. Since effort and an increased heart rate will further reduce coronary artery perfusion at diastole, this again exacerbates the clinical picture.

High vasospasm and atherosclerosis development have been reported in that part of the MB inside the tunnel [10]. Beta and calcium channel blockers should be considered first in the treatment of MB. Since MB is known to increase coronary atherosclerosis, acetyl silicic acid is added to treatment. Efforts can be made to increase coronary perfusion by shortening diastole by increasing heart rate. If there is no decrease in coronary ischemia despite this treatment, percutaneous procedures or surgery should be considered. Symptoms can be overcome by reducing systolic pressure with stent implantation with percutaneous interventions. Complications such as stent thrombosis, in-stent narrowing and stent fracture have also been reported after stent placement [11, 12]. Supra-arterial

myotomy and coronary by-pass are used in surgery. Surgical treatment is essential in selected cases. Potential complications in surgical treatment are right ventricle wall perforation, ventricular aneurysm and postoperative bleeding.

Since our case presented with acute coronary syndrome and symptoms persisted despite intensive medical treatment and due to the presence of MB in two arteries concomitantly (LAD and CX) and the MB in LAD involving a long segment, surgical treatment was decided on. Surgical treatment is essential in selected cases of MB. Myotomy and coronary by-pass can be safely performed.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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