

Circumflex Coronary Artery Fistulae with Myocardial Bridging in the Right Coronary Artery: Case Report

Bir Olguda Sirkümfleks Koroner Arter Fistülü ile Sağ Koroner Arterde Miyokard Kas Bandının Birlikteliği

İbrahim SUSAM, MD,^a
Yalın Tolga YAYLALI, MD^a

^aDepartment of Cardiology,
Pamukkale University
Faculty of Medicine, Denizli

Geliş Tarihi/Received: 23.09.2009
Kabul Tarihi/Accepted: 09.02.2010

Yazışma Adresi/Correspondence:
Yalın Tolga YAYLALI, MD
Pamukkale University
Faculty of Medicine,
Department of Cardiology, Denizli,
TÜRKİYE/TURKEY
yaylalimd@gmail.com

ABSTRACT Congenital coronary fistula is a rare heart anomaly, which is a connection between a coronary artery and a cardiac chamber. Most such fistulas drain into the right side of the heart including the pulmonary artery. Congenital left sided fistula is even more uncommon. Coronary artery bridging has been recognized for a long time and shows an almost uniform predilection for the left coronary artery distribution. Most of these patients are asymptomatic; however, myocardial infarction, congestive heart failure, infective endocarditis, arrhythmias or rupture of the aneurismal involved vessel may occur. Herein, we report an unusual case of circumflex coronary artery fistula in association with myocardial bridging in the right coronary artery distribution.

Key Words: Coronary vessel anomalies; myocardial bridging

ÖZET Doğuştan koroner fistül nadir görülen bir kalp anomalisi olup, bir koroner arter ile kalp bölümünün ilişkide olmasıdır. Bu fistüllerin çoğunluğu pulmoner arter de dahil olmak üzere kalbin sağ bölümüne drene olur. Doğuştan sol tarafta görülen fistüllere daha da nadir rastlanmaktadır. Koroner arter kas bandı (köprüleşmesi) uzun zamandır tanınmakla birlikte yaklaşık devamlı olarak sol koroner arter dağılımında görülme eğilimi göstermektedir. Bu hastaların büyük çoğunluğu belirti vermez. Bununla birlikte miyokard infarktüsü, konjestif kalp yetmezliği, infektif endokardit, kardiyak aritmiler ve anevrizmal damarın rüptürü meydana gelebilir. Bu yazıda biz ender saptanan bu olguyu yani sirkümfleks koroner arter fistülünün sağ koroner arter dağılımındaki kas bandı ile birlikteliğini sunuyoruz.

Anahtar Kelimeler: Koroner damar anomalileri; miyokardiyal köprüleşme

Türkiye Klinikleri J Cardiovasc Sci 2010;22(1):156-9

Coronary artery fistulas are unusual congenital heart anomalies in which blood is shunted into a cardiac chamber. Left coronary artery fistulas draining in to the left ventricle are even more unusual.¹ They usually arise from the right coronary artery, and their clinical importance depends on the type of fistula, site of the shunt, shunt volume, and presence of additional cardiac conditions. Myocardial bridging is a compression of epicardial coronary artery between myocardial fibers during each systole. It usually occurs in the left anterior descending artery, however, right coronary artery distribution bridging is a rare phenomenon.² Angiographic studies have revealed incidences ranging between 0.5% and 12%.

We report here a patient with left circumflex coronary artery with multiple fistulae draining into the left ventricle, and myocardial bridging in the right coronary artery distribution. To our knowledge, the association of the circumflex coronary artery fistulae with a myocardial bridging in the right coronary artery has not been reported before.

CASE REPORT

A 71-year-old male patient was referred to cardiology out-patient clinic for full evaluation. His major complaint was typical anginal chest pain. On physical examination, a loud continuous murmur at the apex was heard. His blood pressure was 170/90 mmHg. His blood chemistry was normal. His ECG showed normal sinus rhythm with non specific T wave changes. His transthoracic echocardiographic examination showed a dilated left atrium (42 mm), dilated aortic root (40 mm), left ventricular hypertrophy, degenerative mitral valve disease with thickened leaflets and valvular prolapsus, and no wall motion abnormality with EF of 55%. He was then taken to the catheterization laboratory for diagnostic coronary angiography. Left-heart catheterization revealed a normal sized left ventricle

with normal contractility. There was 50% stenotic calcific lesion in the right coronary artery and 80% stenosis in the left anterior descending (LAD) artery. The circumflex artery was normal. However intense contrast material passed from the circumflex artery into the left ventricular cavity via multiple fistulae along the circumflex coronary artery (Figure 1 A, B). There was also myocardial bridging in the posterolateral branch of the right coronary artery, which is compressed during each systole (Figure 2 A, B). Subsequently, he underwent percutaneous coronary intervention for the LAD lesion (Figure 3).

DISCUSSION

Most patients with a coronary artery fistula draining into the left ventricle are asymptomatic. Occasionally, however, myocardial infarction, congestive heart failure, infective endocarditis, arrhythmias or rupture of the aneurismal involved vessel may occur.³ They predominantly arise from the right coronary artery. They may not be associated with other congenital heart anomalies.⁴ The occurrence of the symptoms depends on the amount of blood that is drained, the size of the connection,

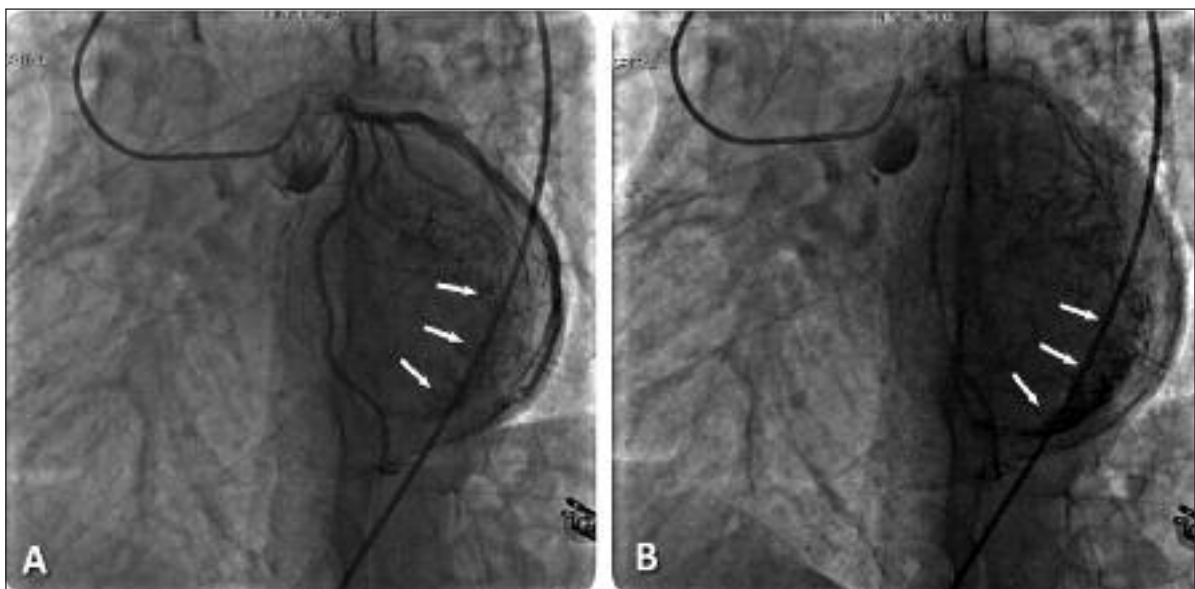


FIGURE 1: Intense contrast material passage from the circumflex coronary artery into the left ventricular cavity via multiple fistulas along the circumflex coronary artery during systole (A) and during diastole (B).

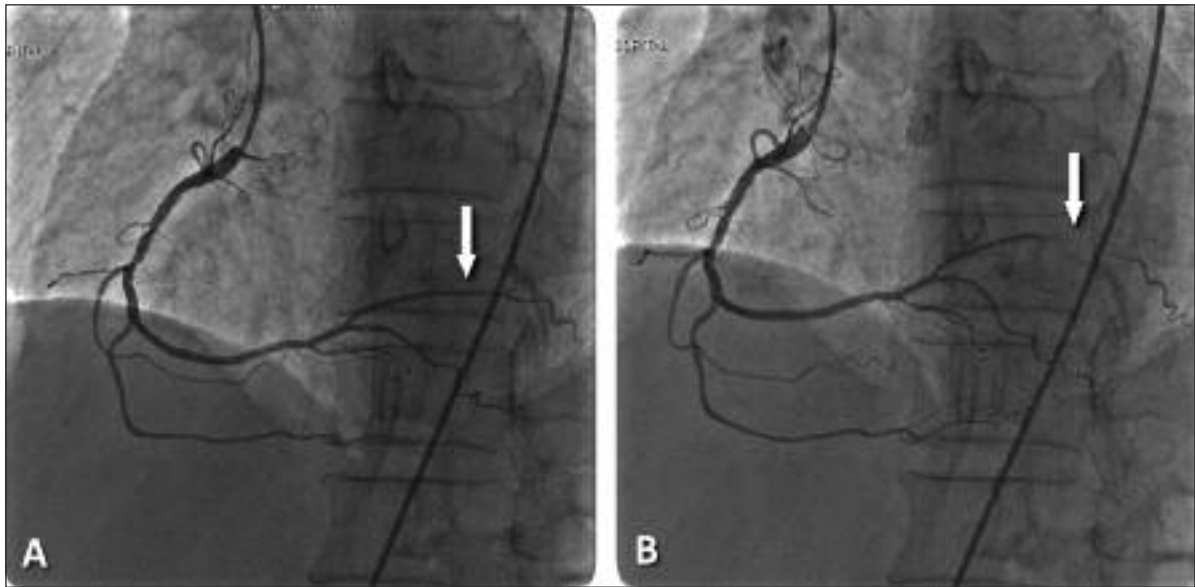


FIGURE 2: Normal coronary filling in the posterolateral branch of the right coronary artery during diastole (A), which is disturbed by myocardial bridging during each systole (B).

and the resistance of the chamber into which the fistula drains. Spontaneous closure of the fistula is uncommon, which has been reported.⁵ In the presence of symptoms especially of heart failure and myocardial ischemia, surgical or transcatheter closure is indicated. Most elderly patients present with dyspnea, right ventricular enlargement or dysfunction as a result of enlargement of the fistula, and increased shunting.

Myocardial bridging occurs when a segment of a coronary artery is compressed during each systole while relaxed in diastole. It is under diagnosed angiographically⁶ even though it may have important clinical implications in individual cases. Manifestations of myocardial bridging include angina, myocardial infarction, arrhythmias, and sudden cardiac death. Chest pain in myocardial bridging might result from vasospasm, vessel thrombosis, or rarely from shear stress from atherosclerosis. There is still controversy with respect to the treatment. However beta-blockers and calcium channel blockers are commonly used agents for medical management.⁷ Although there have been successfully stented cases reported, stenting may be complicated by stent thrombosis, restenosis, and stent fractures.



FIGURE 3: Significant stenosis is seen in the proximal left anterior descending artery.

Our patient presented with typical anginal chest pain. He underwent a successful percutaneous coronary intervention for the LAD lesion. The presence of multiple fistulae in the left circumflex coronary artery precluded a transcatheter approach. Thus, we only recommended endocarditis prophylaxis and medical follow-up.

REFERENCES

1. Fernandes ED, Kadivar H, Hallman GL, Reul GJ, Ott DA, Cooley DA. Congenital malformations of the coronary arteries: the Texas Heart Institute experience. *Ann Thorac Surg* 1992; 54(4):732-40.
2. Gurewitch J, Gotsman MS, Rozenman Y. Right ventricular myocardial bridge in a patient with pulmonary hypertension--a case report. *Angiology* 1999;50(4):345-7.
3. McNamara JJ, Gross RE. Congenital coronary artery fistula. *Surgery* 1969;65(1):59-69.
4. Starc TJ, Bowman FO, Hordof AJ. Congestive heart failure in a newborn secondary to coronary artery-left ventricular fistula. *Am J Cardiol* 1986;58(3):366-7.
5. McClung JA, Belkin RN, Chaudhry SS. Left circumflex coronary artery to left atrial fistula in a patient with mitral stenosis: invasive and noninvasive findings with pathophysiologic correlation. *Cathet Cardiovasc Diagn* 1996;37(1): 52-4.
6. Elmalı M, Gülel O, Aslan S, Soylu K, Çelenk Ç. [Prevalence and imaging findings of myocardial bridging on multi-slice CT coronary angiography]. *Turkiye Klinikleri J Cardiovasc Sci* 2009;21(2):211-5.
7. Schwarz ER, Klues HG, vom Dahl J, Klein I, Krebs W, Hanrath P. Functional, angiographic and intracoronary Doppler flow characteristics in symptomatic patients with myocardial bridging: effect of short-term intravenous beta-blocker medication. *J Am Coll Cardiol* 1996; 27(7):1637-45.