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## Coronary Artery Fistulas: A Hint to Diagnose and Manage

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### Introduction

Coronary artery fistula (CAF) is a still a challenging entity, characterized by a connection between one or more coronary arteries and a cardiac chamber (coronary-cameral fistulae) or a major blood vessel (arterio-venous fistulae) when the myocardial capillary bed is bypassed. It represents about 0.2%-0.4% of all cardiac malformations and 14% of all coronary anomalies [1-3]. CAF reports in the Literature are various according to age, clinical presentation and treatment. Recently, our group reported two emblematic cases with Literature review on this matter [1,2].

### Case 1

A 55-years-old man with no cardiovascular risks and history of chest pain was admitted to our department for further evaluations [1]. The treadmill test (TT) did not show ischemic changes, coronary computed tomography (CT) showed a non-significant left main coronary artery lesion (<50%) and two large coronary fistulas arising from the left anterior descending coronary artery (LAD), proximal and intermediate portion, respectively. The two fistulas terminated in angiomatous plexus, draining into the common pulmonary trunk (PT). The coronary angiography (CA) confirmed the previous CT findings, underlining a bigger shunt-passing through the second fistula, and has discovered a third small fistula arising from the sinus node artery whose further investigations were considered not appropriate.

The patient refused any further investigations for the closure of the fistulas, hence, he was treated conservatively with beta-blocker, ASA, and diuretics. The follow-up to 7-years confirmed the clinical well-being and good control of symptoms.

### Case 2

A 73-year-old man, hypertensive with coronaropathy family trend, and history of effort angina since youth age admitted for ascending aorta aneurysm (56 cm) with severe aortic regurgitation. Patient's examinations were normal, CA showed ectasia of the left coronary artery with a CAF arising from the proximal right coronary artery (RCA) and draining into the PA.

According to the symptoms, despite a not large size angiographically, we decided to close the fistula during the ascending aorta replacement with a ligature of the fistula.

At 3-year clinical follow-up, the patient is still asymptomatic for effort angina with improved quality of life. CAF showed a prominence of the congenital forms, whereas the acquired forms generally are due to infection, neoplasms, trauma or iatrogenic [1-3].

The dimensions, the resistance for blood flow and the different pressures between the edges of CAF conditioning the clinical manifestations that may include chronic myocardial ischemia and angina, myocardial infarction, congestive cardiac failure, and cardiomyopathy [1-3], with fearsome complications as coronary artery dilatation, thrombosis, and rupture [1-3].

A presumptive diagnosis can occasionally be made upon hearing an atypical systolic, diastolic, or continuous murmur (i.e. crescendo-decrescendo, louder in diastole).

A non-invasive suspicion/diagnosis could be possible by ECG at rest as well TT showing volume overload, left or right ventricular hypertrophy, arrhythmias or myocardial ischemia patterns, chest X-ray showing cardiomegaly or pulmonary congestion, echocardiography (ECHO), and transesophageal echocardiography (TOE) may show enlargement of left or right chambers, defects in segmentary or global function, occasionally, detect the CAF as well as cardiac magnetic resonance imaging (MRI). CT should be the first option in order to obtain information about the diameter, the path, the origin, the draining points for the fistula, and the efficacy of the CAF obliteration. CA allows to program interventional closure with dedicated devices. In addition, endovascular imaging may provide more informations [1-3].

Patients with CAF who undergo transcatheter (TCC) or surgical closure have a good prognosis, life expectancy is, however, normal, recurrence rates are as small as 9 to 19% for TCC and 25% in surgical ligation [1-3].

TCC is an intriguing solution reducing hospital stays with the improvement of recovery time with fewer periprocedural complications for suitable fistulas, how previously shown in this Journal [3].

In conclusion, according to our cases 1-2, and following Literature review, in a setting of symptomatic fistula should be considered the closure, regardless of the size, with TCC (first line therapy) or by surgery (if TCC not achievable), whereas CAF with few or non-specific symptoms, negative stress test, and good functional capacity can be treated conservatively with a periodic follow-up.

## References

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