Coronary arteriovenous malformation with steal phenomenon: a case report

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Introduction: Coronary arteriovenous malformation (AVM) is a rare anomaly that consists of abnormal communication between the coronary artery and one of the cardiac chambers or major vessels adjacent to the heart. Approximately half of these patients are asymptomatic while some patients develop myocardial ischemia or infarction resulting from a "steal" phenomenon[1].

Case report: We present a case of a 59-year-old female with a history of hypertension, diabetes and smoking that was referred for coronary angiography due to symptoms of chest discomfort and shortness of breath. Cardiac scintigraphy showed anterior myocardial ischemia. Her electrocardiogram and echocardiogram were unremarkable. Coronary angiography revealed an AVM ascending from the proximal part of anterior descending artery (LAD) with possible communication with the left atrium and pulmonary artery (**Figure 1**). Additional workup included computed tomography coronary angiography that revealed a tortuous septal branch of LAD passing along the left atrium into the pulmonary artery. During follow-up, despite antianginal therapy exertional angina still persisted, therefore transcatheter AVM closure was indicated. Coronary angiography guided with optical coherence tomography (OCT) was performed to verify the feeding septal branch. After successfully stopping the flow through the AVM using a 5.0x15.0 mm balloon (**Figure 2**), a 4.0x12 mm stent graft was deployed and postdilatated with 5.0x8 mm non-compliant balloon, successfully occluding the branch. Control angiogram revealed a second, smaller fistula distally of stent graft that was not suitable for intervention due to potential closure of a large diagonal branch of the LAD (**Figure 3**). Patient symptoms improved significantly post-procedure. Further myocardial ischemia tests using angiography and computed tomography are planned for follow up.

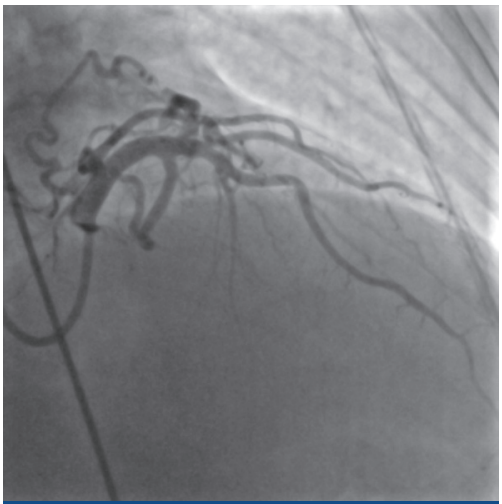

FIGURE 1. Coronary angiography showing a coronary arteriovenous malformation of the left anterior descending artery.

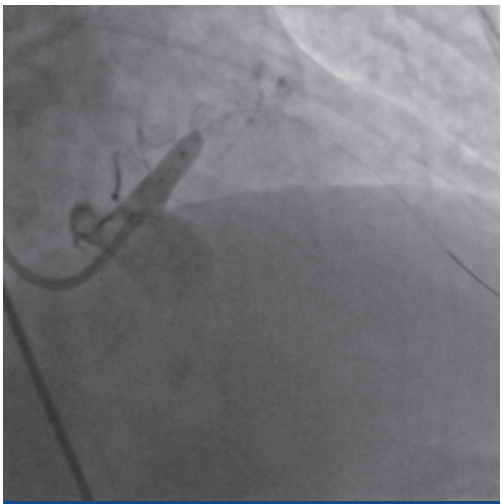

FIGURE 2. Occlusion of an arteriovenous malformation using the standard 5.0x15.0 mm balloon catheter.

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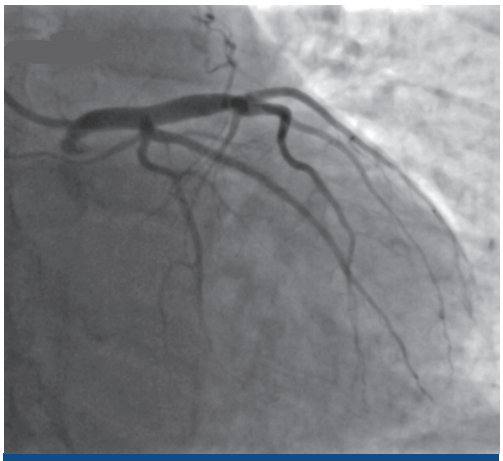

FIGURE 3. Control coronary angiogram after successful occlusion of the arteriovenous malformation "feeding" branch.

Conclusion: When clinically indicated, transcatheter closure is an effective treatment for selected patients with smaller coronary AVMs. Detailed coronary imaging is necessary to optimally plan the procedure. Follow-up coronary imaging to assess for recanalization is recommended[2].

LITERATURE

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