ESC European Society of Cardiology

European Heart Journal - Case Reports (2019) **3**, 1–3
doi:10.1093/ehjcr/ytz084

Left coronary artery anomaly: a case report of a hypoplastic and anomalous origin from the left ventricular outflow tract

Pieter J. Vlaar [1,2]*, Jan J. Aalberts [1], Niek H. Prakken[3], and Erik Lipsic[1]

[1]Department of Cardiology, University Medical Center Groningen, University of Groningen, PO Box 30.001, 9700 RB Groningen, The Netherlands; [2]Department of Cardiology, Catharina Hospital, Eindhoven, the Netherlands; and [3]Center for Medical Imaging, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands

Received 3 February 2019; first decision 21 February 2019; accepted 14 May 2019; online publish-ahead-of-print 18 May 2019

A 35-year-old female patient was referred to our hospital for coronary computed tomography angiography because of stable chest pain. Her electrocardiogram showed no abnormalities. Since 2009, the patient was known with a dilated left ventricle with a mildly reduced ejection fraction (45%). During follow-up, cardiovascular magnetic resonance imaging was performed, which showed no evidence of late gadolinium enhancement. No clear cause was found for the left ventricular dysfunction.

Coronary calcium score was zero. Coronary computed tomography angiography showed a normal right coronary artery, but the left coronary artery (LCA) had an anomalous origin [posterior, just below the border of the non-coronary and left coronary cusp, in the left ventricular outflow tract (LVOT)]. In addition, only limited contrast filling was seen at the left main coronary ostium, suggesting hypoplasia (Figures *1* and *2*). No non-calcified atherosclerosis was present.

To confirm the diagnosis a coronary angiogram was performed. Right coronary angiography demonstrated a dilated artery with extensive intercoronary collaterals to the LCA (Figure *3* and Supplementary material online, *Movie S1*). No antegrade LCA flow was found with local contrast injections. The previously diagnosed left ventricular dysfunction was judged as caused by inadequate collateral perfusion. The patient was accepted for coronary artery bypass grafting. Intraoperative transoesophageal echocardiography showed systolic turbulent flow at the origin of the LCA in the LVOT. Uncomplicated coronary artery bypass grafting with left internal mammary artery to left anterior descending artery was performed. Clinical outcome after 1 year follow-up was good and echocardiography showed improvement of the left ventricular function (biplane 49%).

An anomalous origin of the LCA is very rare finding, with a prevalence of 0.03% in patients undergoing vascular computed tomography.[1] Only a few case reports have previously described a LCA arising from the LVOT before.[2] In addition, this is the first report of combination of both a hypoplastic and anomalous origin of the LCA arising from the LVOT. This case illustrates the importance of considering coronary anomalies in young patients with left ventricular dysfunction.

Supplementary material

Supplementary material is available at *European Heart Journal - Case Reports* online.

Consent: The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

Conflict of interest: none declared.

References

1. Fujimoto S, Kondo T, Orihara T, Sugiyama J, Kondo M, Kodama T, Fukazawa H, Nagaoka H, Oida A, Yamazaki J, Takase S. Prevalence of anomalous origin of coronary artery detected by multi-detector computed tomography at one center. *J Cardiol* 2011;**57**:69–76.
2. Khan A, Audlin J, Miro S, Chaudhuri D, Dunton R. Anomalous origin of the left main coronary artery arising from the left ventricular outflow tract with a retroaortic collateral vessel. *J Card Surg* 2017;**32**:483–484.

* Corresponding author. Tel: 003142399111, Email: Pieter-jan.vlaar@catharinaziekenhuis.nl
Handling Editor: Riccardo Liga

Peer-reviewers: Elena Surkova; Riccardo Liga and Marco De Carlo

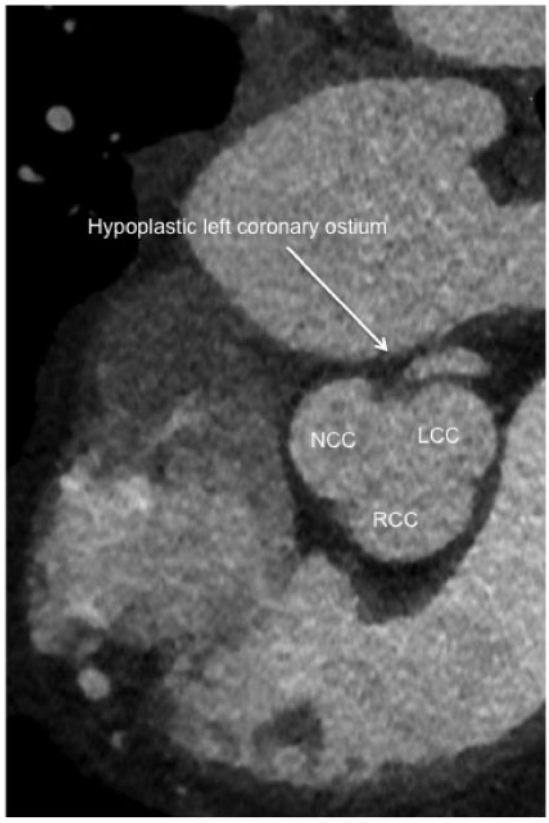

Figure 1 Coronary computed tomography angiography, axial view, showing hypoplastic and anomalous origin of left coronary artery.

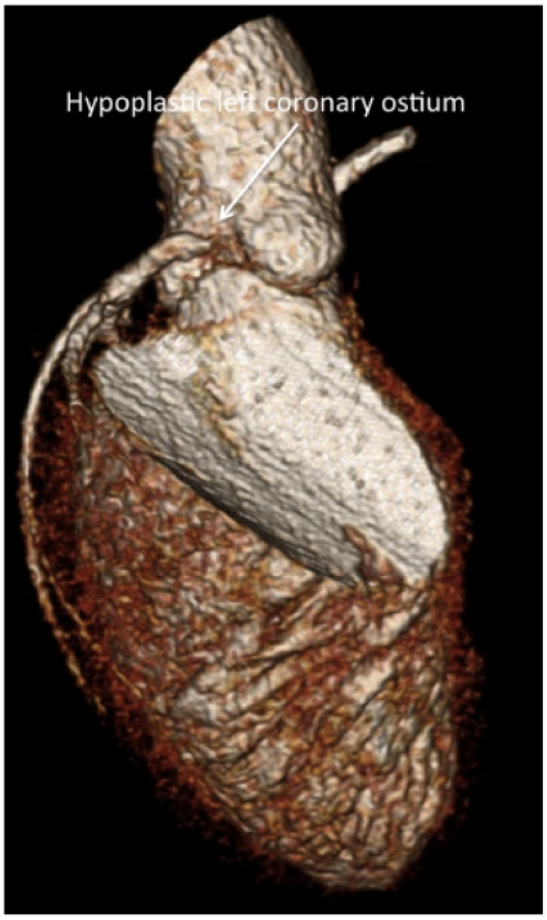

Figure 2 Coronary computed tomography angiography, three-dimensional volume rendered computed tomography image.

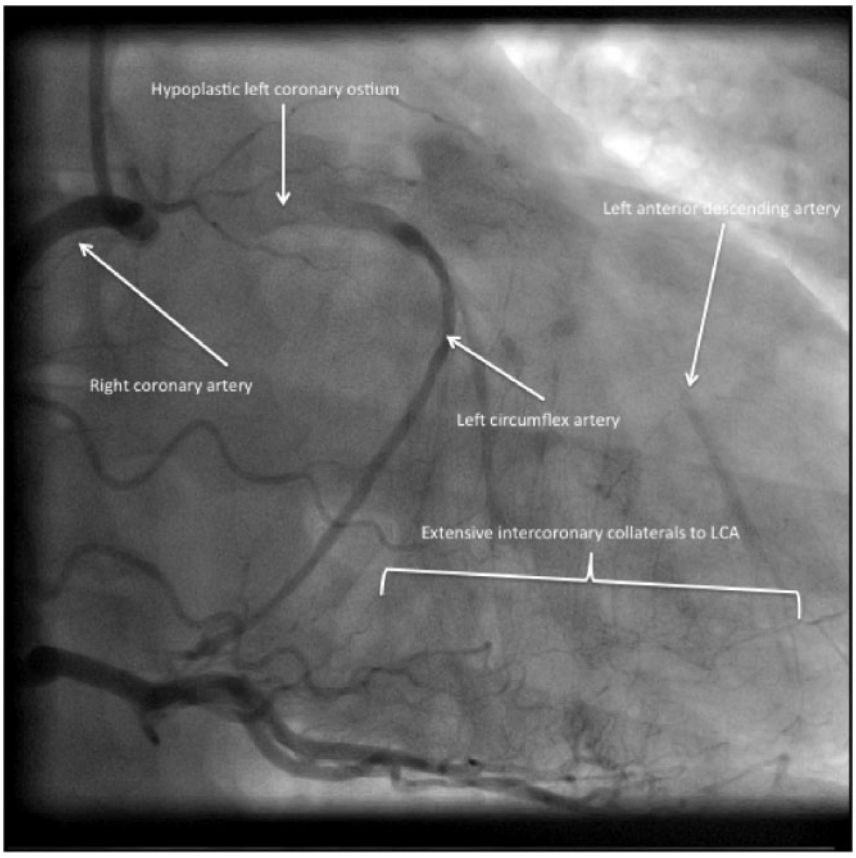

Figure 3 Right coronary angiogram, anterior–posterior view, showing a dilated artery with extensive intercoronary collaterals to the left coronary artery.