

## CARDIOVASCULAR FLASHLIGHT

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## Left main ostial agenesis and right coronary artery occlusion: the importance of the 'Vieussens' arterial ring'

Rui Plácido\*, Ana G. Almeida, Pedro Canas da Silva, and Fausto Pinto

Cardiology Department, Santa Maria University Hospital, Lisbon Academic Medical Centre, CCUL, Hospital de Santa Maria, Avenida Professor Egas Moniz, Lisbon 1649-035, Portugal

\* Corresponding author. Tel: +351 918343090, Fax: +351 217805000, Email: [placidorui@gmail.com](mailto:placidorui@gmail.com)

A 76-year-old man with a medical history of hypertension, smoking, and stable angina was admitted with the diagnosis of ischaemic stroke, after 12-h of development of symptoms. During hospitalization, he frequently referred episodes of angina at rest and his electrocardiogram detected dynamic ST-depression on the lateral leads during chest pain. Echocardiography showed preserved biventricular systolic function, with no regional wall motion abnormalities. Given the high ischaemic risk an invasive coronary angiography was made. However, selective engagements of the right and left coronary ostia were attempted without success. Proximal aortography depicted a separate origin of the conus branch in the right sinus of Valsalva and a selective artery cannulation was pursued. It revealed a large conus artery connected with the left anterior descending (LAD) at its mid-segment, with a TIMI Grade 3 flow (Panels D.1 and E.1; see Supplementary material online, Videos S1 and S2). Numerous collaterals from the distal LAD supplied both the left circumflex and right coronary arteries.

Coronary computed tomographic angiography was undertaken to provide optimal detail concerning the coronary anatomy and to evaluate the relationship between the conus collateral circulation and the sternum. It confirmed the presence of proximal right coronary artery (RCA) occlusion (yellow arrow) and left main (LM) ostial agenesis, with the atretic LM forming a blind end located 10 mm from the left coronary sinus (\*). It also delineated the course of conus artery (white arrow), anteriorly to the right ventricular infundibulum towards LAD mid-segment (arrowhead)—'Vieussens' arterial ring' (see Supplementary material online, Video S3). Revascularization strategy was not attempted owing to clinical deterioration. The patient died during the hospital stay from nosocomial pneumonia.

LM ostial agenesis is an extremely rare anatomic variant of the coronary circulation, occasionally with simultaneous atresia of the LM trunk. The prognosis largely depends on the presence of a collateral circulation, determining left ventricular contractility and ischaemic symptoms. Collateral flow from the conus branch has been previously described in patients with LAD occlusion but is rarely seen in clinical practice.

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To our knowledge, this is the first case reporting the coexistence of LM ostial agenesis and RCA occlusion in which a large conus branch constitutes the crucial collateral pathway, in the presence of preserved left ventricular ejection fraction. Selective injection of the conus branch is suggested in patients with a chronically occluded LM/LAD in order to improve possible planning for revascularization.

Supplementary material is available at *European Heart Journal* online.

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