A 48-year-old woman was admitted with extensive anterior ST-elevation myocardial infarction and cardiac arrest on arrival. Emergent coronary angiography was performed simultaneously with cardiopulmonary resuscitation and multiple DC shocks for ventricular fibrillation. The right coronary artery was patent, but the origin of the left main coronary artery (LMCA) was not identified initially. After persistent efforts (2.5 hours), the LMCA origin was located at the right coronary sinus with a critical stenosis in its midportion. LMCA stenting was performed with a good angiographic result. The subsequent hospital course, which included prolonged mechanical ventilation and reversible anoxic brain injury, culminated in full hemodynamic and neurological recovery. Predischarge computed tomographic (CT) angiography (Figure 1) demonstrated the anomalous origin of the LMCA with acute angulation and asymmetry of its proximal segment, a patent stent in the midsegment, and an interarterial course between the aorta and the pulmonary artery. Cine CT demonstrated mildly reduced left ventricular contraction with anterior hypokinesis and subendocardial hypoenhancement, reflecting microvascular obstruction (see video in the online-only Data Supplement). Because the ostial LMCA narrowing was not severe and not perceived to be the culprit lesion and the patient was recovering from a major neurological insult, definitive corrective surgery was deferred and she was discharged to her home. Follow-up investigation of the LMCA was scheduled for 4 weeks after the acute event. At this time, both CT angiography and subsequent intravascular ultrasound (Figure 2) demonstrated an asymmetrical slit-like orifice of the LMCA with cross-sectional area of 6.3 mm². The stent was fully expanded in the LMCA midsection, with a cross-sectional area of 9.3 mm². The morphology of the LMCA ostium as well as potential subsequent compression or restenosis of the stent within the interarterial segment were considered to jeopardize the patient’s long-term prognosis. She underwent successful coronary artery bypass surgery (left internal mammary to left anterior descending, right internal mammary to an obtuse marginal) and was discharged to her home.

Anomalous LMCA origin with an interarterial course is a recognized risk factor for sudden cardiac death in young subjects. Adverse outcome has been associated with a slit-like orifice and acute angulation. In this case, CT angiography was instrumental in delineating the slit-like

Figure 1. CT angiography demonstrates the anomalous origin of the LMCA (A) (arrow) with acute angulation and narrowing of its proximal segment, a patent stent in the midsegment (asterisk), and an interarterial course between the aorta and the pulmonary artery (PA) (B). RCA indicates right coronary artery; CX, circumflex artery; LAD, left anterior descending coronary artery.
Ostial morphology and interarterial course of the LMCA, which were not clearly appreciable on invasive angiography. Intravascular ultrasound provided definitive high-resolution imaging of the ostial morphology. To our knowledge, this is the first reported case of successful stenting in the setting of cardiac arrest associated with anomalous origin of the LMCA.

Disclosures
None.

References

Figure 2. Both CT angiography (A and B) and a subsequent intravascular ultrasound study (C and D) demonstrate an extremely asymmetrical slit-like orifice of the LMCA with a cross-sectional area of 6.3 mm² and a fully expanded stent in the midsection with a cross-sectional area of 9.3 mm².
Primary Stenting of an Anomalous Left Main Coronary Artery With an Interarterial Course During Cardiac Arrest: Imaging With CT Angiography
Ronen Jaffe, Avinoam Shiran, Tamar Gaspar, Basil S. Lewis and David A. Halon

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