Anomalous Origin of the Left Internal Mammary Artery From the Aortic Arch

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A 67-year-old diabetic man with a pacemaker for symptomatic bradycardia underwent cardiac catheterization for unstable angina, 19 years after coronary artery bypass graft surgery. There were bilateral pedicled internal mammary grafts—from the left internal mammary artery (LIMA) to the left anterior descending coronary artery (LAD), and from the right internal mammary artery to the posterior descending coronary artery—as well as a saphenous venous graft to an obtuse marginal circumflex branch. Angiography revealed a patent right internal mammary artery–posterior descending coronary artery and a culprit diseased saphenous venous graft–obtuse marginal. The LIMA–LAD could not be engaged at its expected origin from the left subclavian artery (Fig. 1A, Online Video 1). The LAD was not collateralized nor was there a resting anterior wall motion defect. This prompted examination with cardiac computed tomographic angiography (CCTA) to clarify the origin of an anomalous LIMA.

CCTA revealed a patent pedicled LIMA graft with an unusual origin and course. It arose distal to the left subclavian artery, tracked anteriorly and vertically, before looping down the anterior chest wall to supply the LAD (Fig. 1B). This was not mentioned in the surgical report. Angiography was resumed; the LIMA graft was selectively engaged uneventfully (Fig. 1C, Online Video 2).

The LIMA arises from the intrascalenic course of the subclavian in 92% of patients, is interscalenic in 7%, and extrascalenic in 1% (1). This is the first described case to our knowledge of an entirely sepa-
rate origin of the LIMA from the distal aortic arch. LIMAs have also been reported arising at the junction of the left subclavian and aorta or from an aberrant vertebral artery (2,3).

This case illustrates the potentially variable origin of the LIMA and the utility of CCTA in difficult graft studies. It also highlights the importance of looking for collaterals, as their absence in this case prompted further investigation for an anomalous vessel.

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