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Multimodality Imaging of an Anomalous Connection of the Right Coronary Artery With Aortic Intramural Course

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A 47-year-old man underwent a medical checkup. He was a professional firefighter, without any notable medical history, who regularly performed high-grade aerobic exercise. He denied any specific symptom at rest or during efforts. His physical examination was unremarkable. An electrocardiogram showed nonspecific repolarization abnormalities in the lateral leads. Single-photon emission computed tomography revealed a small reversible defect in the inferolateral wall during

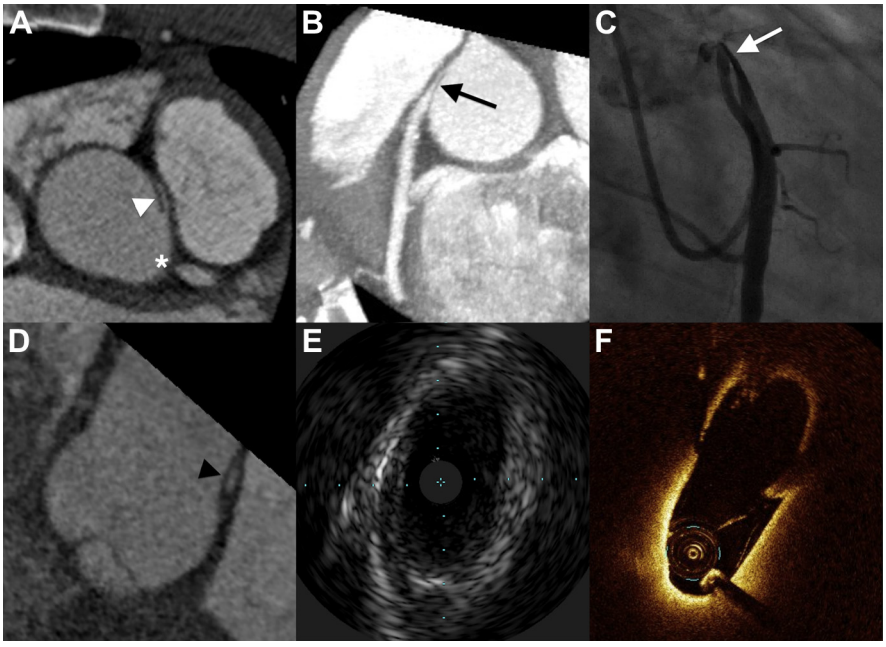

Figure 1. Multimodality Imaging of an Anomalous Connection of the Right Coronary Artery

(A) Computed tomography angiography with an axial view showing an anomalous connection of the right coronary artery **(white arrowhead)** from the left sinus near the origin of the left coronary artery **(white star). (B)** Computed tomography angiography with a curved multiplanar reconstruction showing a narrowing **(black arrow)** of the initial coronary segment due to an aortic intramural course. **(C)** Selective angiography in 30° right anterior oblique projection demonstrating a narrowing **(white arrow)** of the initial coronary segment. **(D)** Computed tomography angiography with a cross-section view showing an oblong shape **(black arrowhead)** of the intramural coronary lumen. **(E,F)** Intravascular ultrasound and optical coherence tomography images demonstrating an oblong shape of the intramural coronary lumen.

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stress. The work-up was completed with a cardiac computed tomography, which showed a moderate stenosis of the distal left anterior descending artery and an anomalous connection of the right coronary artery from the left coronary sinus (Fig. 1A) with a narrowing of the initial segment through an aortic intramural course (Fig. 1B). The patient was referred for a coronary angiogram, which confirmed the anomalous connection of the right coronary artery and a typical nonatherosclerotic narrowing in right anterior oblique projection due to intramural course (Fig. 1C). Intravascular ultrasound and optical coherence tomography demonstrated the oblong shape of the initial intramural lumen of the right coronary artery (Figs. 1D and 1E) with a 50% reduction in lumen surface in comparison with the proximal extramural lumen. Fractional flow reserve was 0.81 after intravenous administration of adenosine. Because of the evidence of an aortic intramural course associated with inducible ischemia, and the potential risk for sudden cardiac death, it was decided to perform coronary bypass surgery of the right coronary artery with the right internal mammary artery (1). The operation was uncomplicated, and the recovery was uneventful. This report illustrates the capability of multimodality imaging in providing essential anatomic informations on coronary arteries with anomalous origin and, more specifically, to demonstrate the presence of an aortic intramural course, a well-known at-risk anatomy, which is often confused in the literature with a compression between the aorta and pulmonary artery.

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REFERENCE

1. Warnes C, Williams R, Bashore T, et al. ACC/AHA 2008 guidelines for the management of adults with congenital heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Develop Guidelines on the Management of Adults With Congenital Heart Disease). J Am Coll Cardiol 2008;52:e143–263.

Key Words: anomalous connection ■ cardiac computed tomography ■ coronary angiogram ■ coronary artery.