

IMAGING VIGNETTE

ADVANCED

CLINICAL VIGNETTE

Right-Sided Aortic Arch With Symptomatic Aberrant Left Subclavian Artery–Kommerell Diverticulum

An Isolation Procedure



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ABSTRACT

Right-sided aortic arch is a rare anomaly (incidence 0.05%), commonly associated with an aberrant subclavian artery (35% of cases) with a Kommerell diverticulum at the origin. This aberrant artery passes posterior to the esophagus and can cause compression syndrome. We present such a case, treated with a hybrid endovascular repair. (**Level of Difficulty: Advanced.**) (J Am Coll Cardiol Case Rep 2020;2:651-2) © 2020 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

A right-sided aortic arch with aberrant left subclavian artery was discovered on computed tomography angiography (CTA) following evaluation for dysphagia in a 25-year-old man. CTA revealed a right-sided arch with an aberrant left subclavian artery passing posterior to the esophagus (**Figures 1A and 1B**). This artery had a Kommerell diverticulum at its origin. The patient underwent a hybrid endovascular repair in which left carotid/left subclavian bypass along with isolation of the left subclavian artery were performed by a cardiothoracic surgeon. Isolation of the aberrant left subclavian artery was performed by using a 16-mm Amplatzer vascular plug (Abbott, St. Paul, Minnesota) (**Figure 1C, Video 1**). A 26-mm × 10-cm Valiant stent graft (Medtronic, Minneapolis, Minnesota) was deployed distal to the origin of the right subclavian artery (**Figure 1D, Video 2**). At 3-month follow-up, the patient's dysphagia had resolved, and CTA showed a patent stent graft with occluded left subclavian origin and a patent left carotid/left subclavian bypass (**Figure 1E**). Unlike a normal aortic arch that courses over the left main bronchus, a right-sided aortic arch was seen, with the aortic arch traversing over the right main bronchus and continuing down as the descending aorta coursing on the right side of the vertebrae. This anomaly is associated with multiple variants of branch origin, including aberrant left subclavian (1).

Aberrant subclavian arteries commonly exhibit a Kommerell diverticulum at their origin, which is known to cause esophageal compression leading to dysphagia lusoria, dyspnea, arm claudication, and other symptoms.

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, or patient consent where appropriate. For more information, visit the JACC: Case Reports [author instructions page](#).

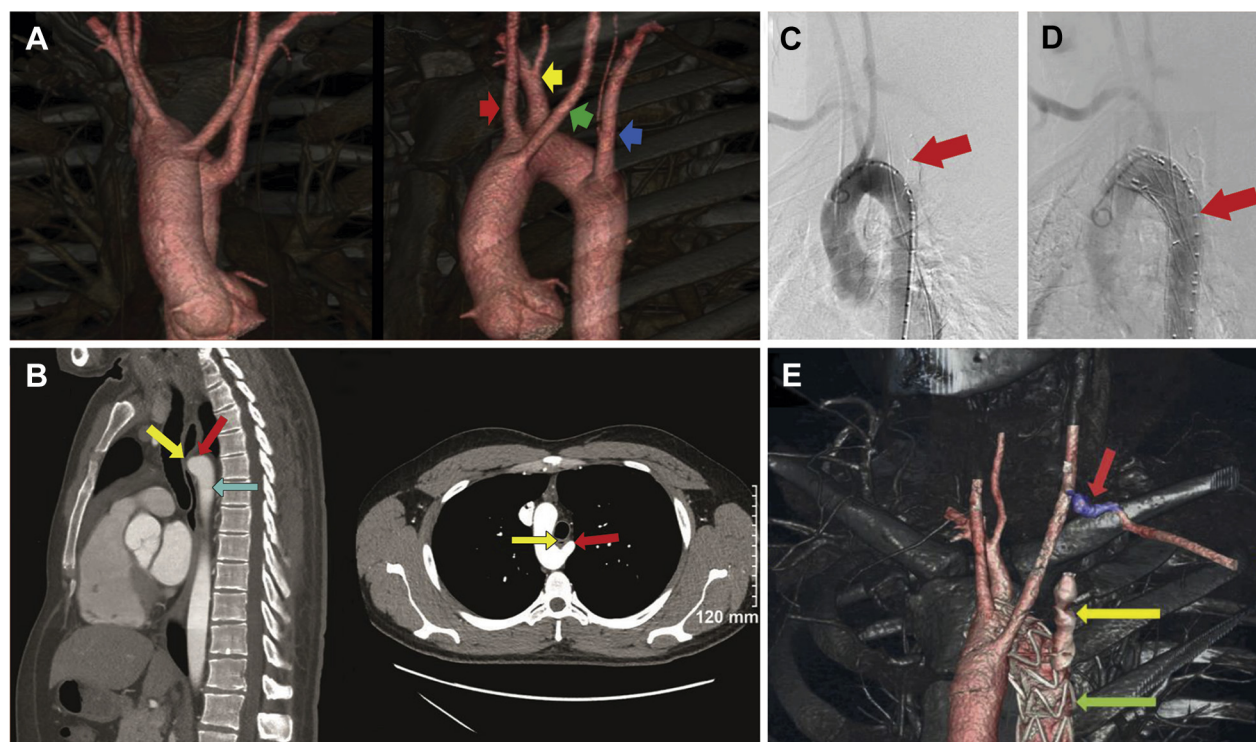
Manuscript received August 29, 2019; revised manuscript received November 13, 2019, accepted December 28, 2019.

ABBREVIATIONS AND ACRONYMS

CTA = computed tomography
angiography

This requires a depressurizing procedure that was traditionally done by surgery via thoracotomy. However, in contemporary practice, a hybrid approach with thoracic endovascular aortic repair and plugs is increasingly attempted (2).

FIGURE 1 Imaging of Thoracic Aortic and Aortic Arch



(A) Three-dimensional reconstruction of the thoracic aorta in the anterior-posterior view (left) and left anterior oblique views (right). Proximal to distal: Left common carotid (green arrow), right common carotid (red arrow), and right subclavian (yellow arrow) and left subclavian (blue arrow) arteries. (B) Computed tomography angiogram of the thorax. On the left is the sagittal plane through the descending aorta (green arrow) with Kommerell diverticulum (red arrow) impinging against the esophagus (yellow arrow). On the right is the transverse plane at the origin of the left aberrant subclavian (red arrow) with compression of the esophagus (yellow arrow). (C) Angiography of the aortic arch shows an endovascular plug (red arrow) occluding the origin of the left aberrant subclavian. (D) An aortic angiogram shows the deployed stent (red arrow) in the aorta. (E) Three-dimensional reconstruction of the thoracic aorta after left subclavian plug (yellow arrow), thoracic endovascular aortic repair (green arrow), and left carotid/left subclavian bypass (red arrow) are seen.

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KEY WORDS aberrant subclavian, congenital, Kommerell, right aortic arch

APPENDIX For supplemental videos, please see the online version of this article.