Successful endovascular repair of symptomatic aberrant left subclavian artery arising from Kommerell diverticulum with the chimney technique

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Video clip is available online.

Computed tomography angiography construction after endovascular repair of a KD.

Central Message

Endovascular repair may be safe and effective treatment for a KD with challenging anatomy.

See Editorial Commentary page 809.

A 57-year-old dysthymic woman presented with dysphagia for 2 months. Axial computed tomography angiography (Figure 1) demonstrates a right-sided aortic arch and a 5.3-cm Kommerell diverticulum (KD). The esophagus (Figure 1, dotted ring) is compressed by a large KD. Computed tomography reconstruction of volume rendering (Figure 2) reveals an aberrant left

subclavian artery arising from the KD. Volume rendering (Figure 2) shows the right-sided aortic arch branches to be as follows: left common carotid artery, right common artery, right subclavian artery, and left subclavian artery.

Aortogram (Figure 3, 1) shows right-sided aortic arch with aberrant left subclavian artery originating from

FIGURE 1. Axial computed tomography angiography image of KD with right aortic arch. AA, Aortic arch; KD, Kommerell diverticulum; LCCA, left common carotid artery.

FIGURE 2. Volume-rendering image of aberrant left subclavian artery and KD. RCCA, Right common carotid artery; RSA, right subclavian artery; RVA, right vertebral artery; LCCA, left common carotid artery; LVA, left vertebral artery; LSA, left subclavian artery; KD, Kommerell diverticulum.

FIGURE 3. Endovascular repair of KD with right aortic arch. AA, Aortic arch; KD, Kommerell diverticulum; LSA, left subclavian artery; RSA, right subclavian artery; RCCA, right common carotid artery; RVA, right vertebral artery; LCCA, left common carotid artery.

the KD. Angiography confirms the presence of a dominant right vertebral artery. A stent (GORE VIABAHN [WL Gore & Associates, Inc, Flagstaff, Ariz], 10 × 50 mm) is implanted retrograde into the right subclavian artery, and the chimney stent is positioned (Figure 3, 2). The thoracic aortic stent graft (GORE TAG [WL Gore & Associates, Inc], 34 × 150 mm) is deployed, and the chimney stent is quickly deployed (Figure 3, 2). Three spring coils (Cook Medical Inc, Bloomington, Ind) and a 14-mm vascular plug II (AGA Medical Corp, Plymouth, Minn) are locked in the origin and the proximal part of the left subclavian artery, respectively (Figure 3, 3). The aberrant left subclavian artery is occluded, and the left vertebral artery is unblocked. There is no retrograde left subclavian artery endoleak. Angiography demonstrates successful exclusion of the KD and patency of the right subclavian artery using the

VIDEO 1. Endovascular repair with the chimney technique of KD. Video available at: [http://www.jtcvsonline.org/article/S0022-5223\(16\)31394-0/addons](http://www.jtcvsonline.org/article/S0022-5223(16)31394-0/addons).

FIGURE 4. Computed tomography angiography construction after endovascular repair of KD. RSA, Right subclavian artery; LSA, left subclavian artery.

endograft with the chimney technique (Figure 3, 4). Retrograde blood flow in the left vertebral artery was shown after left subclavian artery occlusion (Video 1). Computed

tomography angiography confirmed the patency of the right subclavian artery (Figure 4). The patient's postoperative recovery was uneventful, and she was discharged on postoperative day 8. The patient remained well without ischemia, and her symptoms of dysphagia progressively improved.

Right-sided aortic arch with KD and aberrant left subclavian artery is a rare pathology.^{1,2} Endovascular repair with the chimney technique was feasible in this case, avoiding the complex open surgery procedure.³

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