4 months after the operation the extra-anatomic ascending to descending conduit remained widely patent. There has been further thrombosis of the original descending vascular conduit and the adjacent false aneurysm. Two separate remaining collections now fill with contrast medium: a superior collection that fills predominantly from the left vertebral artery but also with a narrow channel from the vestigial isthmus, and an inferior collection that fills by a very narrow channel from the descending aorta, possibly from intercostals back-bleeding in the very proximal de-

scending aorta that was still connected to the conduit. Routine computed tomography follow up is planned.

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EDITORIAL COMMENTARY

Complex congenital aortic arch disease: The need for mandatory long-term follow-up

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Disclosures: Authors have nothing to disclose with regard to commercial support.

Received for publication Sept 21, 2015; accepted for publication Sept 25, 2015; available ahead of print Oct 23, 2015.

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J Thorac Cardiovasc Surg 2016;151:e19-20
0022-5223/\$36.00

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<http://dx.doi.org/10.1016/j.jtcvs.2015.09.113>

Patients with coarctation and interrupted aortic arch comprise a group of adults with congenital heart disease at increased risk for life-threatening, lifelong postoperative sequelae.^{1,2} The risks after aortic reconstruction are well described and include recoarctation or stenosis as well as aneurysm and pseudoaneurysm formation. Placing these patients at further risk is the fact that the complication of aneurysm or pseudoaneurysm is often asymptomatic until aortic catastrophe occurs. Other issues, including the risk of hypertension, heart disease, and decreased survival, add to the challenges of providing appropriate long-term care to these complex patients. Unfortunately, as these patients age, they are often no longer receiving follow-up because they are erroneously considered to have had a simple congenital heart disease that was “cured” with surgery.

Belitsis and colleagues³ present a case of interrupted aortic arch, discovered in adulthood, repaired through a left thoracotomy with a left subclavian artery–descending aorta interposition graft. Two decades later, computed

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Central Message

Adult patients with congenital heart disease with a history of aortic reconstruction are at risk and require lifelong follow-up.

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tomography revealed a 4-cm pseudoaneurysm at the left subclavian anastomosis. After a left subclavian–left common carotid artery bypass was performed, the left side of the chest was reopened to excise the pseudoaneurysm and reconstruct the aorta. Not surprisingly, the dissection proved to be difficult, resulting in the surgeon’s aborting the original plan and performing an ascending–descending aortic bypass with near exclusion of the aneurysmal aortic segment. Apart from a recurrent

laryngeal nerve injury, the patient recovered well. Belitsis and colleagues³ should be congratulated on pushing through and providing the patient with a successful repair.

When looking at the operative planning for this complex congenital arch obstruction patient, a few points should be discussed. At the original operation 22 years previously, a left thoracotomy was used to approach reconstruction. Although performing a bypass graft from the left subclavian artery to the descending aorta may be appealing because of its simplicity, the patient was left with what appears to be a functional hypoplastic aortic arch limited by the size of the proximal left subclavian artery. Completely reconstructing the aortic arch through the left side of the chest would require cardiopulmonary bypass and hypothermic circulatory arrest. A strong argument can be made that an ascending-descending aortic bypass through median sternotomy with cardiopulmonary bypass support might have been a better initial operation for this adult patient. The results with this operation are excellent, with minimal residual aortic arch gradient, effective blood pressure control, and a low incidence of complications.⁴ With regard to the repair of the pseudoaneurysm, this case report emphasizes the difficulties associated with reoperative aortic surgery through the left side of the chest. Belitsis and colleagues³ state that they encountered dense adhesions, making the dissection extremely difficult and unsafe. Another option to consider, is after performing the carotid-subclavian artery bypass, to place a covered stent to exclude the pseudoaneurysm. After this, if a significant gradient exists across the aortic arch, an ascending-descending aortic bypass through a median sternotomy would provide excellent relief while avoiding a hostile environment in the left side of the chest.

This case highlights the importance of lifelong follow-up in adult congenital heart disease centers for patients undergoing aortic arch reconstruction for congenital anomalies. In addition to comprehensive medical management,

patients with a history of coarctation or interrupted aortic arch repair are best served with periodic imaging of the aorta with magnetic resonance angiography or computed tomography.⁵ Ideally, imaging should be performed every 3 to 5 years for surveillance, but it may need to be performed at more frequent intervals if a complication, such as an aneurysm, is detected. Magnetic resonance angiography may be preferable for long-term follow-up of young patients to avoid the consequences of repeated radiation exposure. Patients who require intervention should be reviewed in a multidisciplinary fashion, because complications may be optimally treated by hybrid approaches involving cardiothoracic surgery, vascular surgery, and interventional cardiology.

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