Adult Dysphagia Lusoria*

Treatment by Arterial Division and Reestablishment of Vascular Continuity

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The case of a 27-year-old woman with dysphagia secondary to esophageal compression by an anomalous right subclavian artery is presented. Division of the anomalous vessel at its origin and revascularization of the right upper extremity by direct end-to-side anastomosis to the ascending aortic arch was accomplished through a right anterolateral thoracotomy. We believe this is the preferred surgical treatment of dysphagia lusoria in the adult.

An aberrant origin of the right subclavian artery as the fourth branch of the aorta is a well-recognized developmental anomaly of the embryonic vascular system. Compression of the trachea and esophagus may occur, but the majority of these vascular anomalies remain asymptomatic. However, symptoms of esophageal compression requiring surgical relief may appear in later life. The term dysphagia lusoria has been applied to such cases. We report the case of an adult with dysphagia in whom the symptoms were relieved by dividing the anomalously arising vessel and anastomosing it to the ascending aorta.

Case Report

A 27-year-old woman complained of increasing difficulty in swallowing over the preceding four years. The symptom was induced by eating meats and fruits, although drinking liquids was well tolerated. She denied symptoms of esophageal reflux and stated that as a child she had never had difficulty swallowing.

A routine thoracic roentgenogram revealed a prominent left paramediastinal mass. An esophagogram demonstrated compression of the proximal esophagus at the level of the aortic arch in aopathognomonic bayonet-like deformity (Fig 1 and 2). Findings of the patient’s physical examination were normal. No abnormality of either radial pulse or blood pressure was noted. Computed tomographic (CT) scan of the thorax suggested the presence of an aberrant right subclavian artery arising from the descending aorta. This was confirmed by aortic arch aortography, which clearly demonstrated the anomalous origin of the right subclavian artery from the descending aorta distal to the left subclavian artery (Fig 3). Also, the right vertebral artery arose from the right common carotid artery.

Operation was undertaken through a right anterolateral incision through the bed of the nonresected fourth rib. The third costal cartilage was divided at its sternal attachment. The right subclavian artery was found emerging from behind the esophagus, cephalad to the azygous vein, from its origin as the fourth branch of the aortic arch. The azygous vein was divided, and the right subclavian artery was traced to its origin at the aorta, where it measured 1.2 cm in diameter. The vessel was divided between clamps at its aortic origin, and the proximal end was closed with a continuous nonabsorbable suture. After mobilization of the artery, it was implanted directly into the ascending aorta by way of a retrocaval path to avoid compression of the superior vena cava. Mobilization of the distal

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![Figure 1](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21466/ on 06/26/2017)
of nature) was introduced in 1761 by David Bayford, while he was an apprentice surgeon in England. His finding was reported before the Medical Society of London in 1787. He described a 33-year-old woman with a long history of progressive dysphagia who eventually died of malnutrition. At autopsy, an aberrant right subclavian artery was found to be compressing the esophagus.

Aberrant origin of the right subclavian artery is a relatively common congenital anomaly occurring in approximately one of every 200 persons, but it usually does not produce esophageal dysfunction. Infrequently, an adult presents with dysphagia secondary to a vascular anomaly. Dysphagia lusoria, caused by an aberrant right subclavian artery that arises distally on the aortic arch and causes esophageal compression as it traverses the posterior mediastinum, is an example of this. However, relatively few cases have been reported in adults.

Treatment of this anomaly varies, with surgical correction being reserved for patients with prominent symptoms. Simple ligation and division is the most common procedure employed, particularly in children. However, this procedure may be associated with risks if performed in adults. Claudication of the right arm has been reported after ligation of an aberrant subclavian artery; and subclavian steal syndrome is a potential problem when flow is obstructed in the proximal portion of a subclavian artery.

In the adult, therefore, it is preferable to retain normal circulation in the right arm, and this has been accomplished in several ways. The divided right subclavian artery has been anastomosed to the right common carotid artery and directly to the aortic arch by means of a prosthetic graft. A variety of surgical approaches has been used in these endeavors, including right and left thoracotomies, cervical incision, median sternotomy, and combined incisions.

**FIGURE 2.** Right anterior oblique view, same patient.

The right subclavian artery provided sufficient length of vessel to obviate a prosthetic graft. The pericardium was opened, and a partial occluding clamp was placed on the proximal ascending aorta. An end-to-side anastomosis between the right subclavian artery and the ascending aorta was performed using continuous nonabsorbable sutures. At the conclusion of the operation, the newly positioned right subclavian artery lay without tension and exhibited normal pulsations.

Postoperatively, the patient had equal pulses and blood pressures in both arms. She reported some weakness and paresthesias in her right arm, which resolved uneventfully within a couple of weeks. No dysphagia was experienced in the postoperative period. Digital subtraction angiography performed one month postoperatively revealed a patent anastomosis with free flow of dye to the right arm (Fig 4 and 5), and an esophagogram was normal. She remains well one year after the operation.

**DISCUSSION**

The term dysphagia lusoria (dysphagia secondary to a freak

**FIGURE 3.** Aortic arch aortogram showing anomalous origin of right subclavian artery from descending aorta.
We believe it is important to retain the circulation to the right upper extremity for the reasons mentioned. Direct implantation of the divided artery into the aorta avoids the necessity of employing a prosthetic graft. This technique was first described by Bailey et al.\textsuperscript{a} and as far as we know the current report is only the second recorded example of its use. Reimplantation of the artery into the proximal aortic arch is an anatomic repair that can be performed easily and without the use of any prosthetic material. Potential difficulties with the carotid circulation are avoided, and since no foreign material is placed in the circulation, infection is not a problem. An operative approach through a right anterolateral thoracotomy provides excellent exposure for the entire procedure, allowing division of the aberrant artery at its origin from the aorta, its complete mobilization, and end-to-side anastomosis of the artery to the proximal aortic arch.

REFERENCES

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FIGURE 4 (left). Digital subtraction arteriogram demonstrating patency of reimplanted right subclavian artery. FIGURE 5 (right). Graphic representation of Figure 4. RC, right carotid; RV, right vertebral; LC, left carotid; LV, left vertebral; RSC, right subclavian; and LSC, left subclavian.