Dysphagia Lusoria in a Patient with Aberrant Right Subclavian Artery

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Financial Disclosure

• The speaker has no financial or other conflicts of interest to disclose.
Introduction

• An aberrant right subclavian artery (ARSA) is a rare anatomical anomaly, present in only 0.5%-2% of the general population.

• In a normal setting, the right subclavian artery is the first of two branches of the brachiocephalic artery.

• However, in an aberrant setting, the brachiocephalic artery is missing and usually four large arteries directly branch off the aortic arch.
Anatomy of an ARSA
ARSA Causing Compression

• The retroesophageal course of the artery can compress the esophagus and cause difficulty swallowing, known as dysphagia lusoria
• Only 7-10% of adult patients with an ARSA report compression symptoms
• The most commonly reported compression symptoms are dysphagia (71.2%), shortness of breath (18.7%), and retrosternal pain (17%)
• There is a higher probability of symptoms with ARSA if there is a concomitant anomaly of the carotid arteries, such as Bicarotid truncus
Objective

• We present a patient who presented with acute coronary syndrome and incidentally found to have a symptomatic ARSA, dysphagia lusoria
Methods

• A retrospective chart review was performed to generate this case report
• A single patient was followed over a period of 1 year
Initial Patient Presentation

• Patient: 60 yr. BM presents with symptoms of chest pain as well as long standing history of dysphagia
• History: HTN, HL, obstructive sleep apnea, obesity, and 20 pack-year smoking history
• Diagnosis: NSTEMI
• Plan: Cardiac catheterization via right radial artery access
• Complication: anomalous and tortuous course of the right subclavian artery would not allow the passage of the balloon catheter; the catheter became kinked/knotted and then was not able to be retrieved via the same radial artery approach
Intra-Op: Vascular Surgery Consult

- Patient found to have ARSA with tortuous course precluding passage of catheter
- Multiple attempts to pass catheter led to knotted catheter
Catheter Complication

Knotted catheter ultimately retrieved after establishing additional arterial access via the right CFA and trapping and ensnaring the tip of the catheter while rotating it multiple times to release the knot.
Catheter Retrieval

- Upon release of the knot, the catheter was successfully retrieved via the right radial artery approach.
- Interventional cardiology then performed a right coronary artery PCI without further complication.
- Discharged home two days post procedure with outpatient vascular surgery follow up.
Vascular Surgery Clinic F/U

- Worsening dysphagia since catheterization
- Right shoulder and arm pain exacerbated by exercise; occasional numbness and paresthesia of right upper extremity.
- Palpable right radial and brachial pulse
- GI consult and plan for subsequent aortic arch angiography
CTA showed ARSA with proximal esophageal compression
Dissection of Proximal right subclavian artery
Gastroenterology Workup

• Patient endorsed a Globus sensation and food stuck in his esophagus, sometimes necessitating emesis to clear it out

• Esophagogastroduodenoscopy revealed extrinsic compression of the proximal esophagus with normal mucosa
Aortic Arch Angiography

- Common Carotid Trunk
- Right subclavian arteriogram re-demonstrated the non-flow limiting dissection
- Origin of the right subclavian artery noted to be in close proximity of the origin of the left subclavian artery
Surgical Treatment Options

- Stage 1: Right carotid-subclavian bypass with proximal ligation of ARSA
- Stages 2 and 3 were planned if symptoms persisted
  - Stage 2: Left carotid-subclavian bypass
  - Stage 3: Aortic stent-graft (TEVAR)
Hybrid Procedure

• Endovascular occlusion of the aberrant right subclavian artery (O) and the origin of the aberrant subclavian artery is covered by a thoracic stent graft (T)
• Revascularization is facilitated by carotid subclavian bypass (By) or transposition of the aberrant artery
• The vertebral artery has to be preserved
Operative Management:
Right Carotid-Subclavian Bypass

1. End-to-side anastomosis of proximal right common carotid-R subclavian artery with 8 mm Dacron graft.

2. The right subclavian artery was then ligated proximal to the right vertebral artery.
Post-Operative Course

• Discharged POD#1
• Two week f/u: Patient reported complete resolution of his dysphagia
• Patient noted resolution of his right arm numbness and paresthesia as well
• Six month post-op f/u: Continued resolution of symptoms
Discussion

• Management of ARSA has typically involved thoracotomy or median sternotomy
• Newer techniques include supra-aortic debranching along with endovascular and hybrid techniques to improve outcomes
Surgical Techniques

(A) Oversewing of the aberrant subclavian artery origin, retro-esophageal aberrant subclavian artery resection and right subclavian–carotid transposition

(B) Graft replacement of the proximal descending aorta, resection of Kommerell’s diverticulum and ascending aorta to right subclavian artery bypass

(C) Graft replacement of the ascending aorta, the aortic arch and proximal descending aorta, resection of Kommerell’s diverticulum, right subclavian–carotid transposition and aortic graft to bilateral carotid and left subclavian artery bypass

(D) Modified frozen elephant trunk procedure and bilateral aorto-subclavian bypass

(E) Thoracic endovascular aortic repair (TEVAR) (zone 2) and bilateral subclavian–carotid transposition

(F) TEVAR (zone 0) and ascending aorta to all supra-aortic vessels bypass
Conclusion

• ARSA is a rare condition
• ARSA can be associated with compression symptoms in 7-10% of patients including dysphagia which can be debilitating
• ARSA can lead to complicated radial artery catheterization
• ARSA can successfully be treated in a staged fashion
References


