



# Aorto-Carotid Bypass: A Novel Method for Treatment of Upper Extremity Claudication



Tyler Chappel MS<sup>2</sup>, Atbin Doroodchi MD<sup>1</sup>, Vijay Patel MD<sup>1</sup>, Gautam Agarwal MD<sup>1</sup>

Medical College of Georgia at Augusta University Department of Vascular Surgery<sup>1</sup>  
Medical College of Georgia at Augusta University School of Medicine<sup>2</sup>

## CASE 1

- 78F w/ HTN, HLD, DMII, CAD, Hx of MI w/ PCI in 2020 and 10 pack year smoking history
- **HPI:** 2-year history of pulsatile tinnitus, R upper extremity weakness and pain with and without movement.
- **Meds:** Aspirin, Plavix, Atorvastatin
- **PE:** Blood pressure higher in lower extremities, diminished right brachial pulse, and bilateral carotid bruit

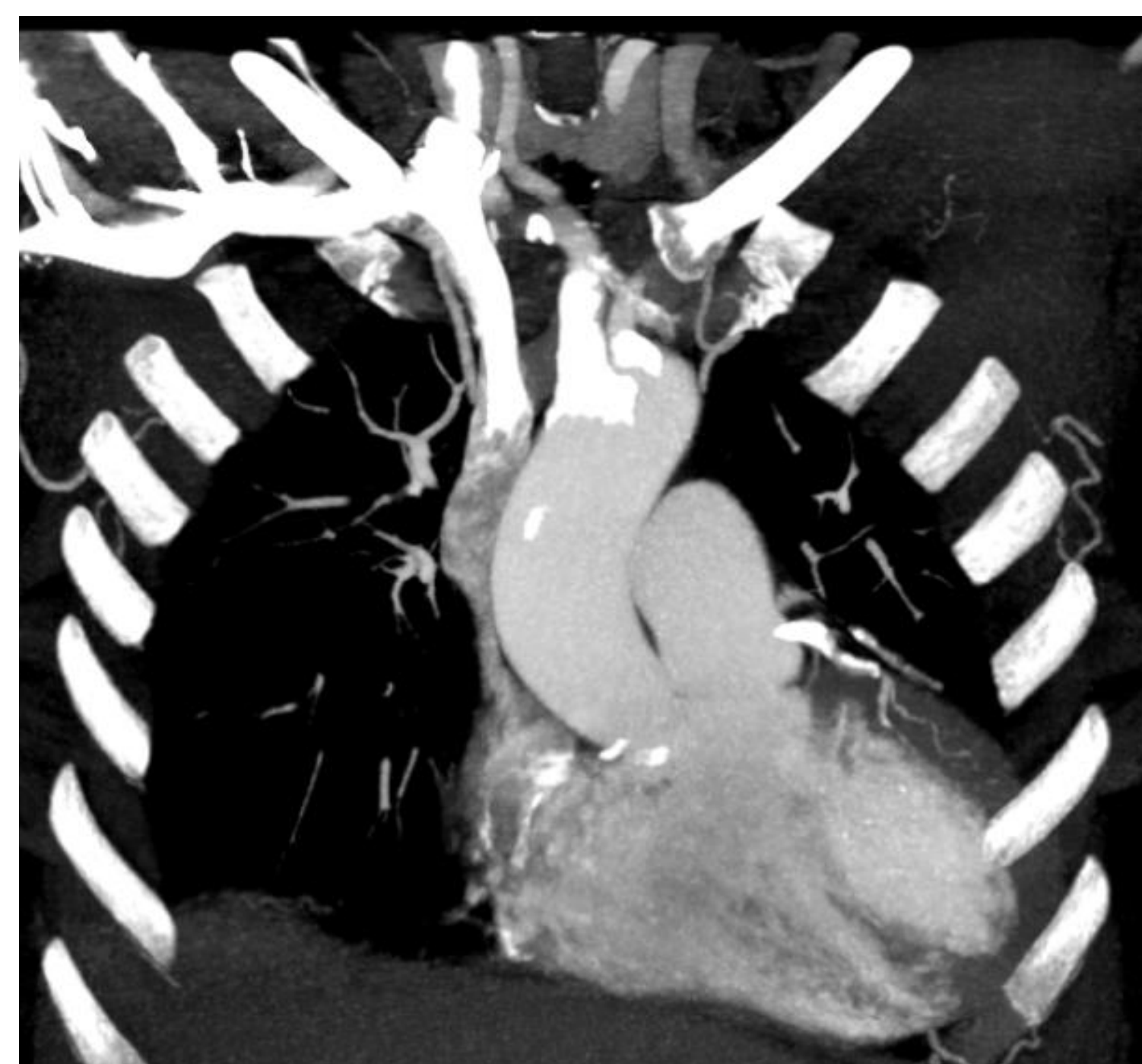


Figure 1. CTA demonstrating occlusion of brachiocephalic artery

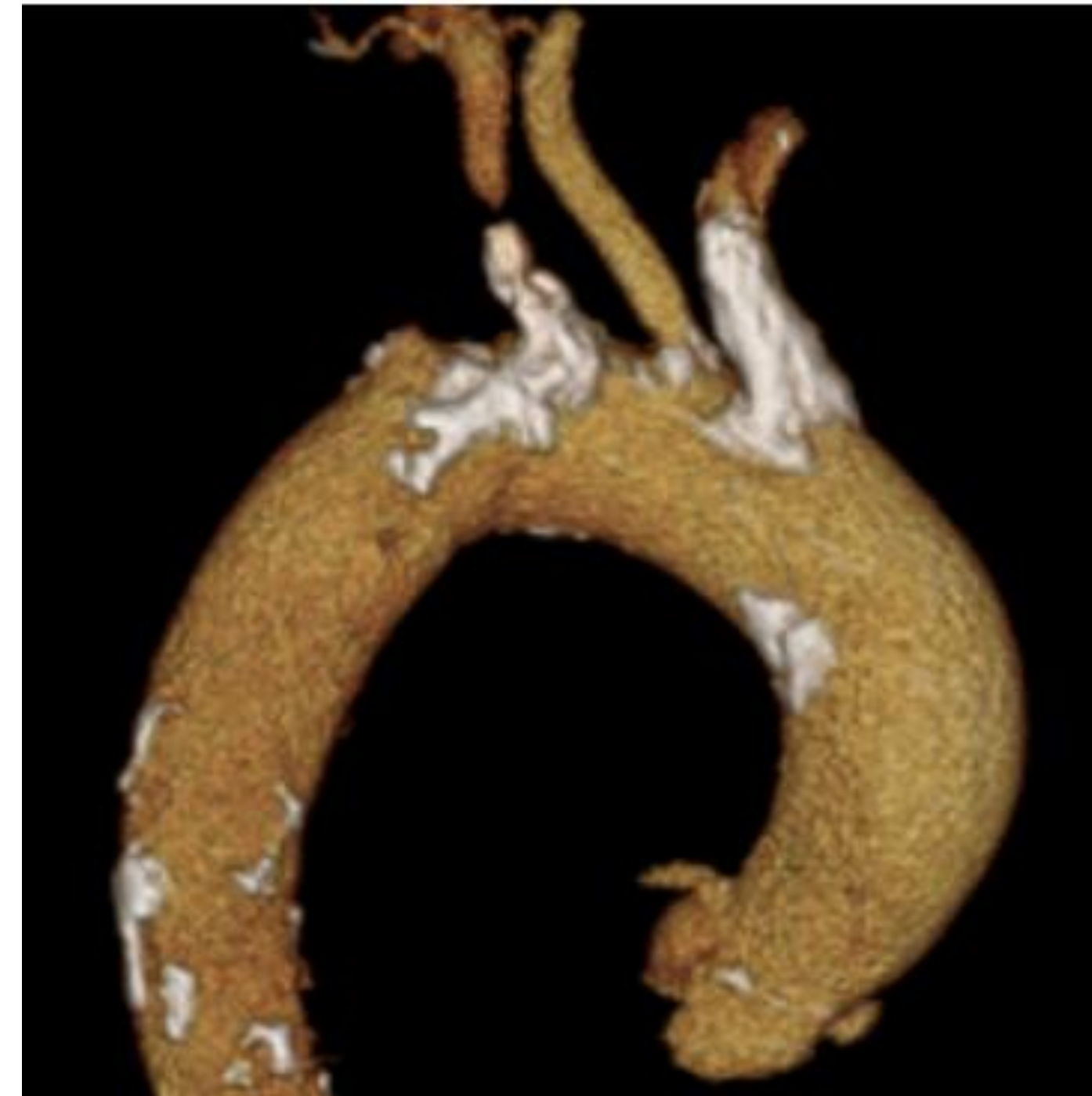


Figure 2. 3D reconstruction of aorta and major branches (posterior view)

- **Operation:** Aorto-right carotid bypass with concurrent mitral valve repair and 2-vessel CABG
- 8mm Dacron graft was anastomosed into ascending aorta in an end-to-side fashion using 5-0 Surgipro in a running fashion.
- **Post-op course:** Complicated by atrial fibrillation which resolved on POD4 and an AKI which resolved on POD6.
- **Discharge:** POD9 on Aspirin, Eliquis, and Statin
- **5 months post-op:** Clinical evaluation revealed symptomatic improvement with resolution of her weakness and pain in the right upper extremity

## INTRODUCTION

- Aorto-carotid bypass is a rare procedure that was initially described in 1959 for the management of Takayasu arteritis.
- Many reports have been presented for symptomatic carotid disease secondary to vasculitis or dissection of supra-aortic branch vessels.
- Herein we present a case series involving two patients who underwent concurrent coronary artery bypass grafting (CABG) as well as aorto-carotid bypass using Dacron graft due to their life-limiting upper extremity claudication and rest pain



Figure 3. Angiography demonstrating occlusion of brachiocephalic artery

## DISCUSSION

- Extensive pre-op cardiac and vascular evaluation is required to determine likelihood of benefit from aorto-carotid bypass
- Aorto-carotid bypass was chosen over carotid-subclavian bypass due to concurrent CAD with CABG offering ease of access to the aorta and its proximal branches
- Appropriate patient selection is critical to determine individuals with the greatest likelihood of benefit from aorto-carotid bypass for life-limiting upper extremity claudication

## CASE 2

- 49F w/ HTN, HLD, DMII, CAD, and ischemic cardiomyopathy (LVEF 35-40%)
- **HPI:** dyspnea on exertion, paresthesia in the right upper extremity, and right arm pain with minimal activity
- **Meds:** Losartan, Aspirin, Atenolol, Atorvastatin
- **PE:** Blood pressure variation between the upper extremities for greater than 1 year and reduced right radial pulse.



Figure 4. CTA demonstrating occlusion of brachiocephalic artery

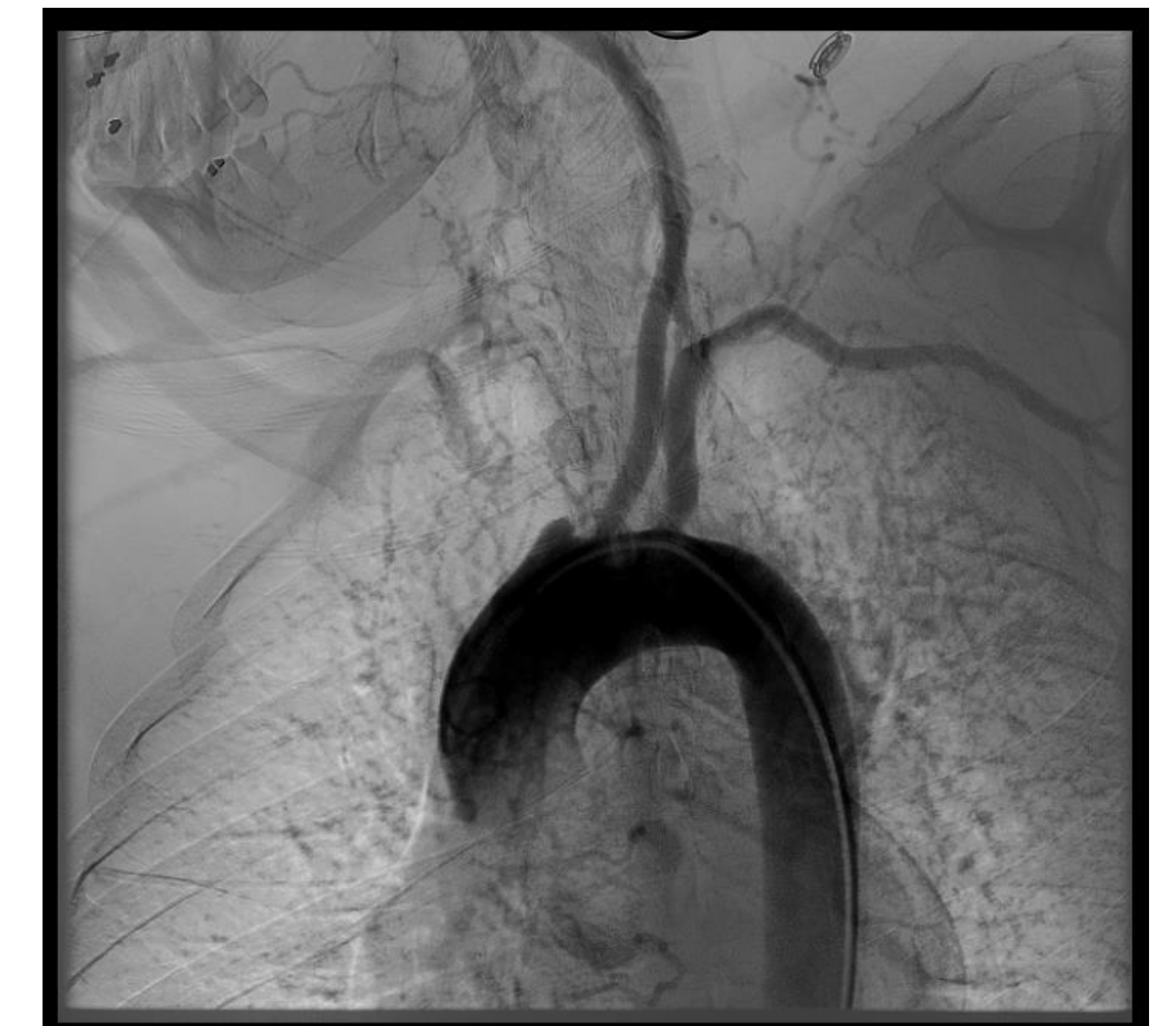


Figure 5. Angiogram demonstrating occlusion of brachiocephalic artery

- **Operation:** Aorto-right carotid bypass with concurrent 4-vessel CABG
- 8mm Dacron graft anastomosed into ascending aorta with 5-0 Prolene suture in an end-to-side fashion
- **Post-op course:** Patient was extubated on POD1
- **Discharge:** POD5 on ASA, Plavix, and Statin
- **8 months post-op:** Resolution of her right arm pain with no remaining sequelae of disease