

## Aortic rupture – a shift in treatment paradigms

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**Introduction:** A ruptured aortic arch aneurysm is a life-threatening condition associated with extremely high rates of mortality. If diagnosed before rupture, it can be prevented by elective repair, but in an acute setting, the fatal outcome is often unavoidable.<sup>1</sup>

**Case report:** We present the case of a 73-year-old male patient with a history of chronic obstructive pulmonary disease (COPD), nicotine use, arterial hypertension, and atrial fibrillation on anticoagulant therapy. He was referred to our center for operative assessment after being diagnosed with contained polytopic aortic arch rupture extending between the innominate to the left subclavian artery (LSA) (Figure 1). Additionally, there was a dissection of the proximal LSA and a moderate hemorrhagic pericardial effusion without signs of tamponade. Upon arrival, the patient was hemodynamically

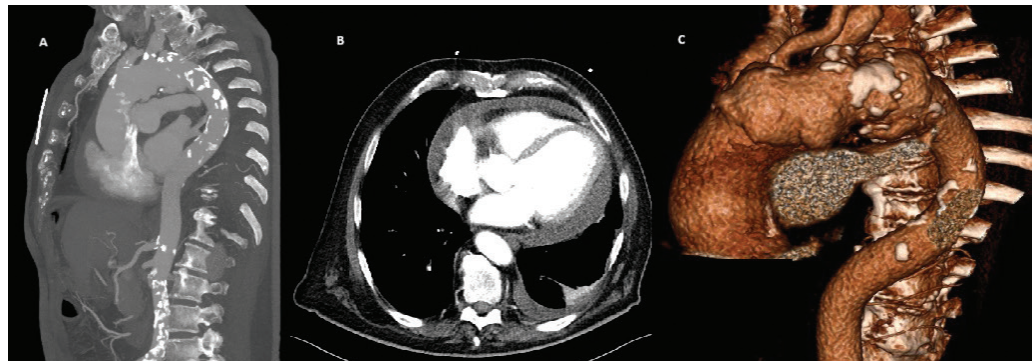


FIGURE 1. Contrast enhanced CT angiography showing aortic arch rupture (A), hemorrhagic pericardial effusion (B), 3D reconstruction of the aorta (C).

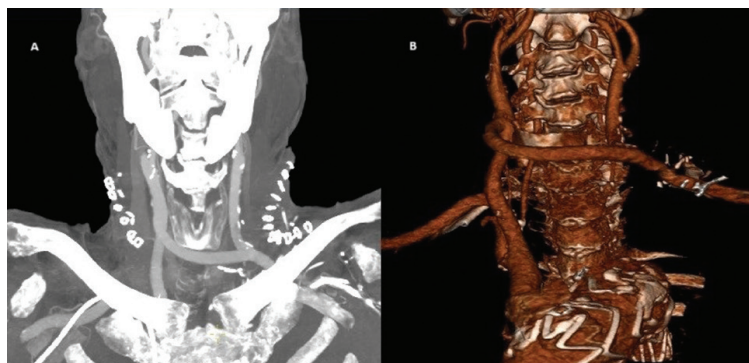


FIGURE 2. CT angiography showing patent carotid-carotid bypass and carotid-subclavian bypass (A), and 3D reconstruction showing bypasses with TEVAR (B).

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**FIGURE 3.** Healed postoperative wounds after aortic arch debranching.

stable complaining of chest pain and hoarseness. Due to the technically challenging lesion location, prolonged cardiac surgery operative duration, extended circulatory time arrest, and the unavailability of custom-made prosthesis in acute setting, the multidisciplinary team determined that the patient was a candidate for a hybrid approach using both open surgical extra anatomic aortic arch debranching and Thoracic Endovascular Aortic Repair (TEVAR).<sup>2,3</sup> Since TEVAR needed to be extended into zone 1 of the aortic arch, revascularization of the left carotid artery was necessary to prevent neurovascular compromise. A carotid-carotid crossover bypass with revascularization of LSA along with TEVAR placement extending from zone 1 to the descending aorta were successfully performed. The patient recovered in the intensive care unit and was extubated the following day. A subsequent CT angiogram showed a good position of the endograft without endoleak and with patent bypasses (**Figure 2**). He was transferred to the cardiology ward where he exhibited an exacerbation of COPD that was successfully treated with stand-

ard pharmacological and breathing therapy. Two months after discharge, he attended an outpatient visit in a very good functional status (**Figure 3**).

**Conclusion:** This case demonstrates a successful hybrid, less invasive approach in an acute life-threatening setting for a condition that is conventionally treated with complex elephant trunk procedure.

#### LITERATURE

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