



Total Thoracic Aorta Replacement Due to Rupture of Thoracic Aortic Aneurysm After Thoracic Endovascular Repair

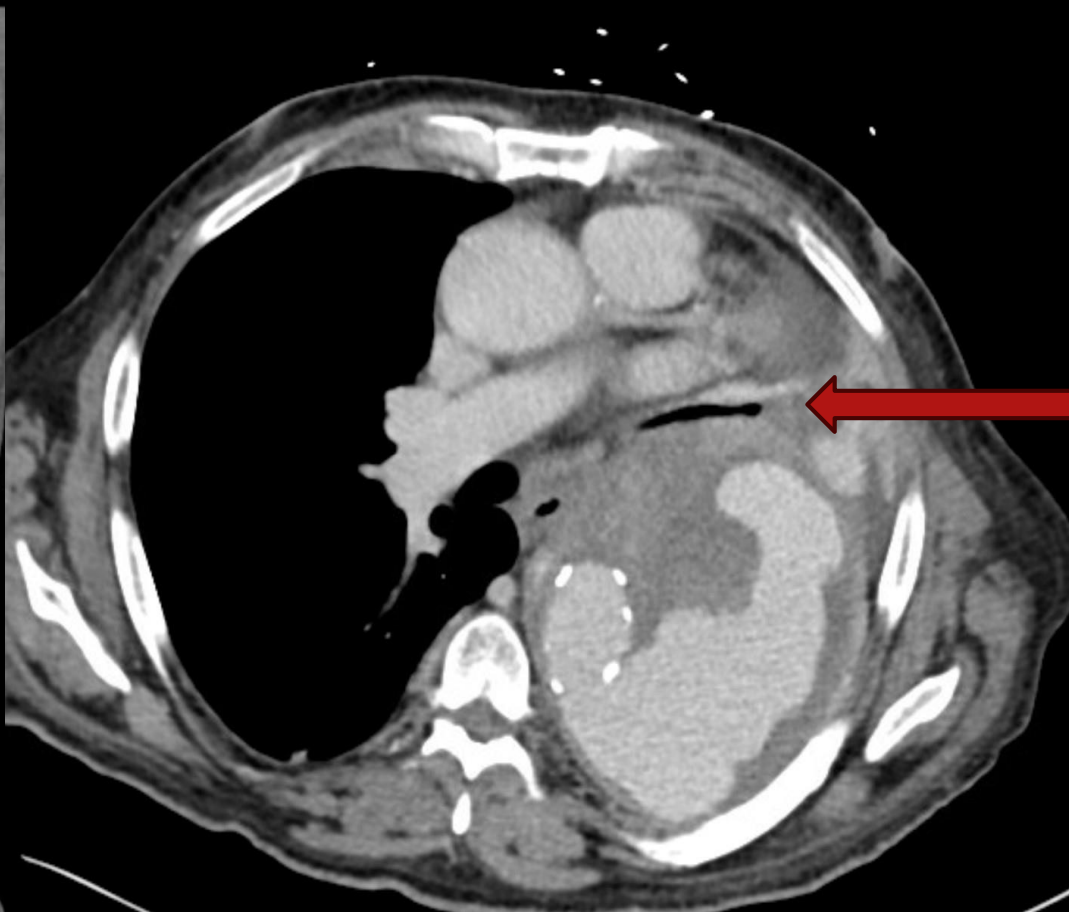
Objective

- ▶ We present the management of a ruptured thoracic aorta with total thoracic aorta replacement in a patient with a prior TEVAR.

Methods

- ▶ A 56-year-old male presented with worsening left arm and chest pain. He has a history of a ruptured Type B aortic dissection complicated by PEA arrest which was emergently stented with a thoracic endograft 6 months ago. The patient also underwent a right to left femoral artery bypass due to malperfusion of his left leg.
- ▶ On presentation, his CTA chest revealed an 11.0 x 11.5 cm ruptured descending thoracic aorta with a massive left chest hemothorax and Type 1 endoleak at the distal aortic graft. Transesophageal echo revealed significant aortic insufficiency.

Imaging



Compressed left
bronchus

Results

- ▶ The patient was taken to the operating room where a lumbar drain was placed and a left thoracotomy was performed through the 5th and 8th intercostal spaces with evidence of a large, contained rupture of the thoracic aorta.
- ▶ The lung was dissected with exposure of the diaphragm. The patient was then placed supine, a right axillary artery cutdown was performed, and cardiopulmonary bypass was initiated via the right axillary artery and right femoral vein. Through a median sternotomy, the aortic valve, ascending aorta, and aortic arch were replaced.

Results

- ▶ Remaining on cardiopulmonary bypass, the patient was repositioned laterally, and the distal end of the aortic graft used to replace the aortic arch was pulled through the remaining native aorta and TEVAR graft down to the diaphragm.
- ▶ The distal graft was then sewn to a fenestrated aorta at the diaphragm and the patient was weaned from cardiopulmonary bypass. The patient was noted to have a significant air leak and became profoundly hypoxic with evidence of disruption of the posterior membranous portion of the left main stem bronchus. The patient was then placed on venoarterial ECMO via a sidearm of the aortic graft with repair of the bronchus.
- ▶ The chest was packed with chest closure the following day. The patient was weaned from ECMO and discharged home several weeks later.

Conclusions

- ▶ This case represents the successful management of a ruptured descending thoracic aorta in the setting of a previous TEVAR with total replacement of the aorta from the sinotubular junction to the diaphragmatic hiatus.
- ▶ The total thoracic aorta was replaced due to poor substrate for sewing a proximal anastomosis in the left chest. A bronchial injury was identified and ECMO was immediately utilized for support.
- ▶ We demonstrate that replacement of the entire thoracic aorta is a reasonable approach when there are limited options for isolated repair of the descending aorta within the left chest and highlight the use of ECMO support to facilitate the management of complications.