CARDIOVASCULAR SURGERY IMAGES

ENDOVASCULAR APPROACH FOR PENETRATING THORACIC AORTA TRAUMA

Thoracic aortic trauma is a devastating injury that can be due to a blunt or penetrating mechanism. Penetrating aortic trauma (PAT) can be due to low- and high-energy objects. PAT can present as cardiac tamponade or massive hemothorax. Lower-energy injuries like stab wounds can produce a small, contained pseudoaneurysm. Back in 1994, Dake et al. described the first successful thoracic endovascular aortic repair (TEVAR) in a series of 13 patients. The mortality rate of the open approach to treat thoracic aorta trauma was 20%, and up to 14.3% of the patients developed paraplegia due to spinal cord ischemia (SCI). The risk of complications such as stroke, extremity ischemia, and SCI still exists with TEVAR but is much lower. There is no recent evidence on the endovascular approach to treat PAT.[1-4] This is the case of a 28-year-old man without cardiovascular risk factors with a left posterior thoracoabdominal high-velocity gunshot wound. The patient remained hemodynamically stability. An early thoracic x-ray was performed that revealed the presence of left hemothorax that was treated with a left chest tube. After being referred to our center, a review of the coronary computed tomography angiography performed on chest, abdomen, and pelvis revealed the presence of PAT with a pseudoaneurysm (grade 3 thoracic aorta trauma) and intraluminal thrombus in the thoracic descending aorta (Figures 1-3) 7 cm above the celiac axis. Although open intervention with left posterolateral thoracotomy with or without cardiopulmonary bypass is a feasible option for some patients with this condition, the procedure is no stranger to complications, and the rates of failure are as high as 28% and 19%, respectively. After careful review of the patient's anatomy and the outcomes of the treatment modalities available, endovascular approach was deemed the better option given the patient's fewer postoperative complications and short intensive care unit (ICU) and hospital stays due to the SARS-CoV-2/COVID-19 pandemic. He was treated with TEVAR with a 22 mm x 117 mm Zenith TX2ZDEG 20-Fr thoracic aortic endograft (Cook Medical, Bloomington, Indiana, United States) via femoral vascular access (Figure 4). The patient did not have any postoperative complications and stayed only 1 day at the ICU for postoperative vital sign monitorization plus another day at the hospital. The patient provided his written informed consent for the publication of the case report and images.

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Received: 05/01/2022 Accepted: 06/08/2022 - https://doi.org/10.55200/raccv.es.v20.n2.0014

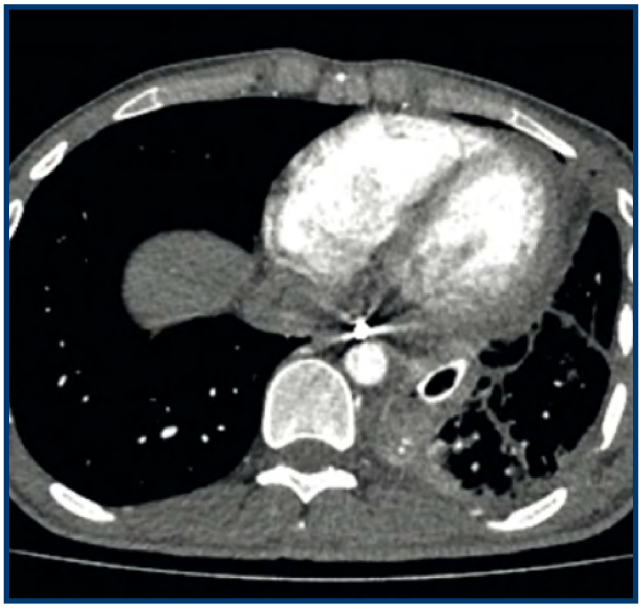
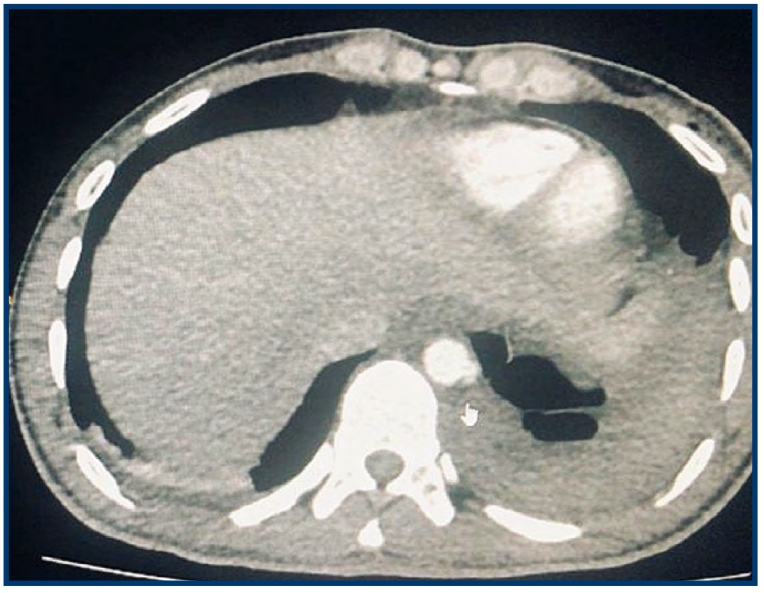


FIGURE 1. Coronary computed tomography angiography showing a high-velocity gunshot wound next to the thoracic aorta.

FIGURE 2. Coronary computed tomography angiography showing the total compromise of the aortic wall due to high-velocity gunshot wound with presence of pseudoaneurysm.



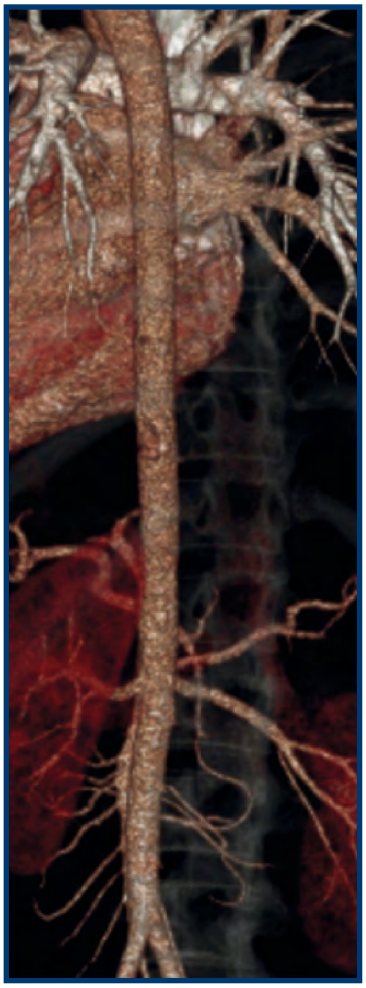


FIGURE 3. 3D thoracic aortic reconstruction showing the loss of aortic wall continuity due to high-velocity gunshot wound.

FIGURE 4. Final thoracic aortic angiography after endovascular repair of the aortic injury using the TEVAR technique with endograft covering.

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