

INTRODUCTION

Blunt thoracic traumas due to traffic accidents or falls from a height may conceal the degree of the underlying cardiovascular injury. **Aortic transection and interventricular septal rupture characterize such typical rare conditions associated with high mortality, representing the second most common leading cause of death following intracranial hemorrhage due to trauma.** Approximately 80% of these patients die at the scene of the incident, and among those who are transported to the hospital for treatment, about 50% succumb within the first 24 hours. We present two male pediatric patients diagnosed with grave cardiovascular pathologies following a traffic accident.

CASE PRESENTATION

CASE 1

- A conscious **16-year-old male** presenting with stable vital signs was admitted to the ER after a motorcycle accident.
- Radiologic screening revealed an **occipitoparietal fracture on the right-side, with left frontal laceration and subcapsular hematoma.**
- CT scan: **a right minimal pneumothorax and approximately maximum 3cm left-side hemothorax accompanying contusion of the liver with stage 1 liver laceration and hematoma, stage 2 splenic laceration with perisplenic free fluid, and left kidney laceration.**
- **Left-sided femoral and right-sided epiphyseal wrist fractures** were fixated by the orthopedic surgeon.
- **Stanford type B and DeBakey type III classifications of a thoracic aortic transection and accompanying left-side hemomediastinum** was determined in repeated imaging study of thorax CT with intra-venous contrast.
- Erythrocyte, FFP transfusions, and fluid resuscitation were indicated during the first hours due to the patient's hypotensive and tachycardic state accompanying a hemoglobin level as low as 8 mg/dl. A total of 160 cc of hemorrhagic fluid was accumulated postoperatively via the Jackson Pratt drain.
- He was discharged on postop day 16.

Figure 1: The exact location of the thoracic aortic transection is observed (white arrow) in the coronal (left) and the sagittal sections (right). The coronal section discloses hemorrhagic fluid around the perihepatic area and extends to Morison's pouch.

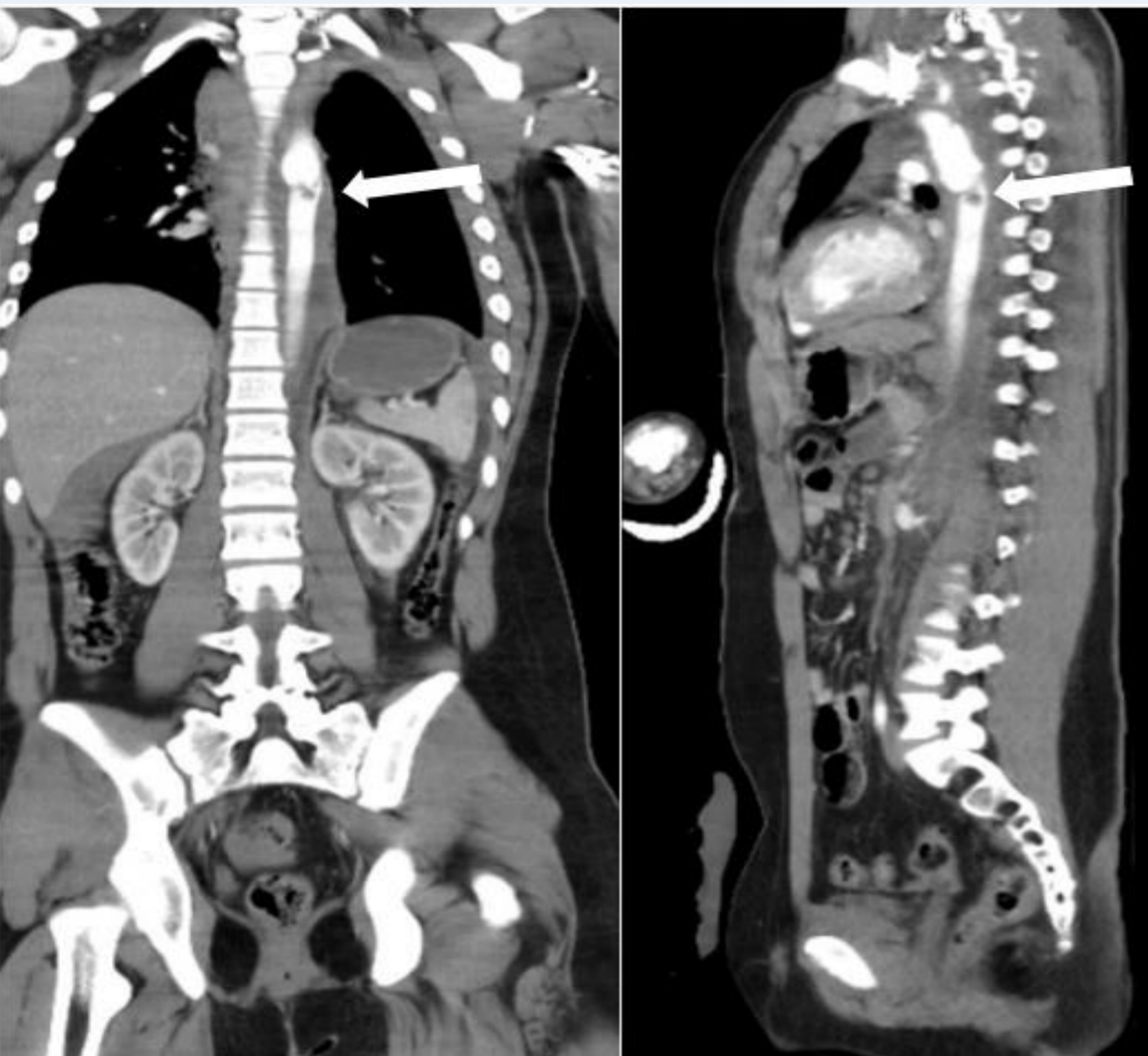


Figure 2: TEVAR procedure with a stent in place to treat a descending aortic aneurysm.

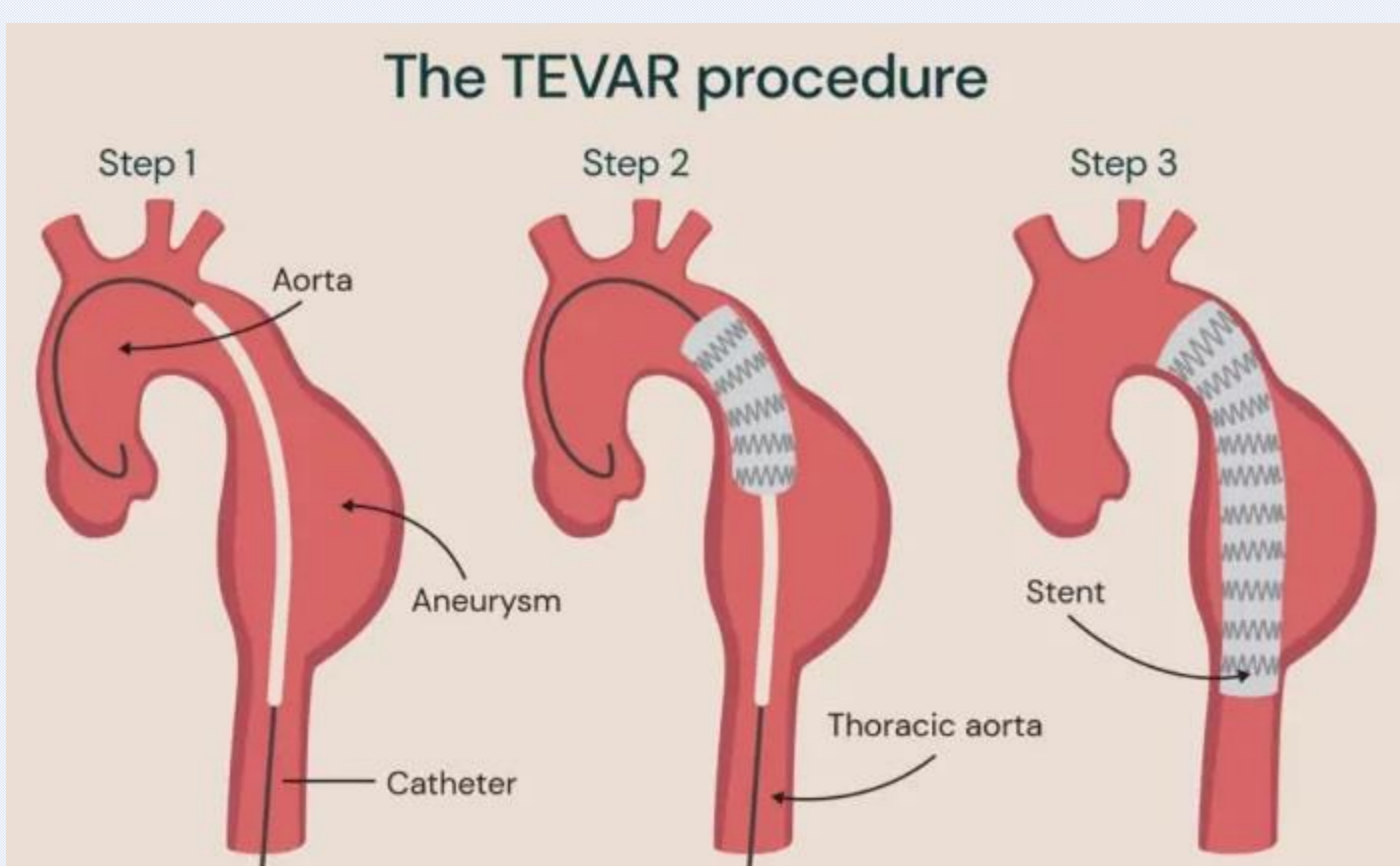
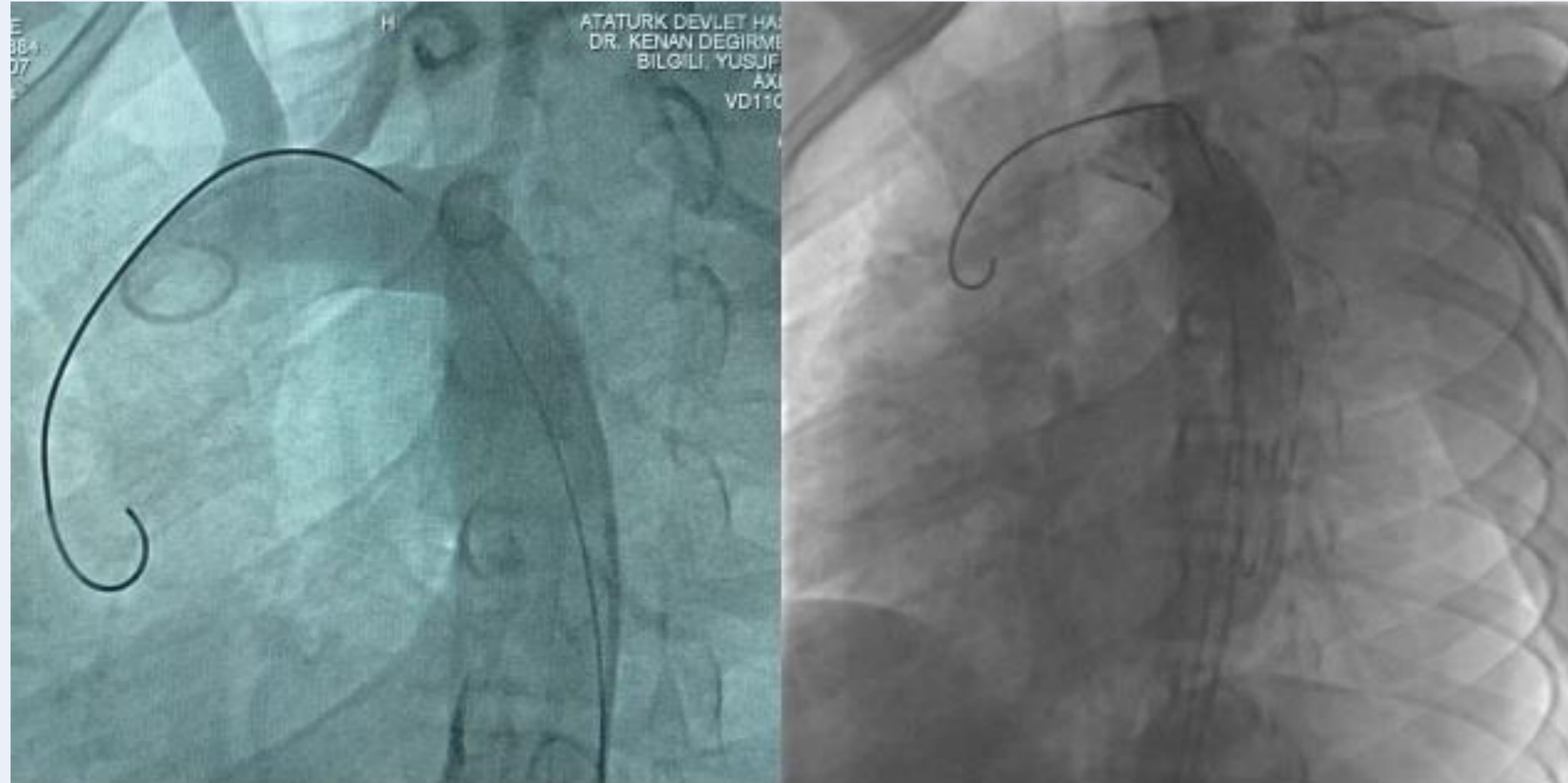


Figure 3: A thoracic endovascular repair was performed through the right femoral vein (the guidewire on the left) using Seldinger's technique. Displaying the stent in situ on the right.



CASE 2

- A **three-year-old poly-traumatized male** overrun by a motor vehicle was admitted to the ER following successful cardiopulmonary resuscitation.
- Radiologic screening revealed **right occipital fracture, bilateral multiple rib fractures, lung contusion, left hemothorax, accompanying splenic contusion, left renal laceration with subcapsular hematoma, and left iliac and right pubic bone fractures.**
- Erythrocyte and FFP transfusions and fluid resuscitation were needed during the first hours as he was hypotensive with a hemoglobin level as low as 5.6 mg/dl. After 16 hours in ICU, he had **repeated bouts of cardiac arrest** and was resuscitated successfully.
- After three days of peritoneal dialysis, his **acute renal failure** recovered.
- He developed heart failure with **hemodynamic instability on day 14.** Transesophageal echocardiography and color flow Doppler echocardiography demonstrated a **10 mm ventricular septal defect** with left-to-right shunting into the right pulmonary artery
- An acquired **10 mm septal tear 1.5-2 cm below the pulmonary valve annulus** extending into the left ventricular in the mid-septal area was repaired.
- He was discharged on day 35.

Figure 4: A- Echocardiographic view of the acquired 10mm ventricular septal tear (red arrow). B- View of the left to right shunting into the right pulmonary artery under color flow doppler echocardiography. C- Normal echocardiographic view following successful surgical repair.

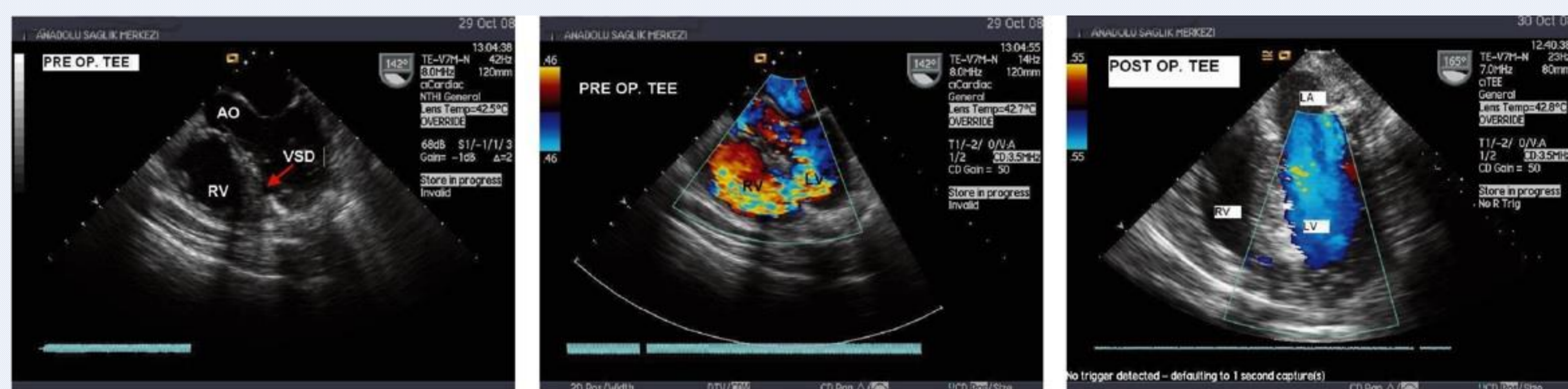


Figure 5: An approximately 10 mm defect is seen at a pulmonary valvular level in the interventricular septum (white arrow).



CONCLUSION

Thoracic CT with intravenous contrast and a detailed echocardiography is specifically mandatory in patients with severe chest trauma, initially exerting stable hemodynamics and presenting with signs of hemothorax or mediastinal widening. Although it is rare, in severe thoracic trauma, we must be aware of the possibility and search for the presence of a silent cardiovascular or intracardiac injury, as it may be fatal in origin requiring rapid intervention.

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