



## Prophylactic use of thoracic endovascular aortic repair in a young patient with impending aortic rupture

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Prophylactic thoracic endovascular aortic repair (TEVAR) was successfully performed on a 22-year-old female who was incidentally found to have left-sided T8 and T9 pedicle screws from a prior thoracic spine fusion surgery for scoliosis indenting the descending thoracic aorta (DTA) on a computed tomography (CT) scan of the chest (red arrow, Fig. 1a). Subsequent CT angiography (CTA) and 3-dimensional reconstruction (3DR) images of the DTA demonstrated the left T9 pedicle screw indenting the posterior medial DTA by 4 mm and the left T8 pedicle screw abutting the posterior medial margin of the DTA with no associated leak or pseudoaneurysm (red arrows, Fig. 1b and c). To avoid rupture of the DTA, prophylactic TEVAR was

deemed appropriate. After fluoroscopic confirmation of the indentation (red arrow, Fig. 1d, Online Video 1), two Endurant aortic cuff grafts (Medtronic, Minneapolis, Minn.) (size 23 × 23 × 70 mm) were successfully deployed in an overlapping fashion to allow two layers of stent graft at the site of the aortic indentation without any immediate complications. Follow-up at 1 year with repeat CTA and 3DR imaging of the DTA revealed no complications and maintained aortic integrity (Fig. 1e, f, and g).

TEVAR is the preferred therapeutic modality for the treatment of various DTA pathologies. To our knowledge, this is the first case of the unique use of TEVAR in a patient with impending aortic rupture due to pedicle screws.

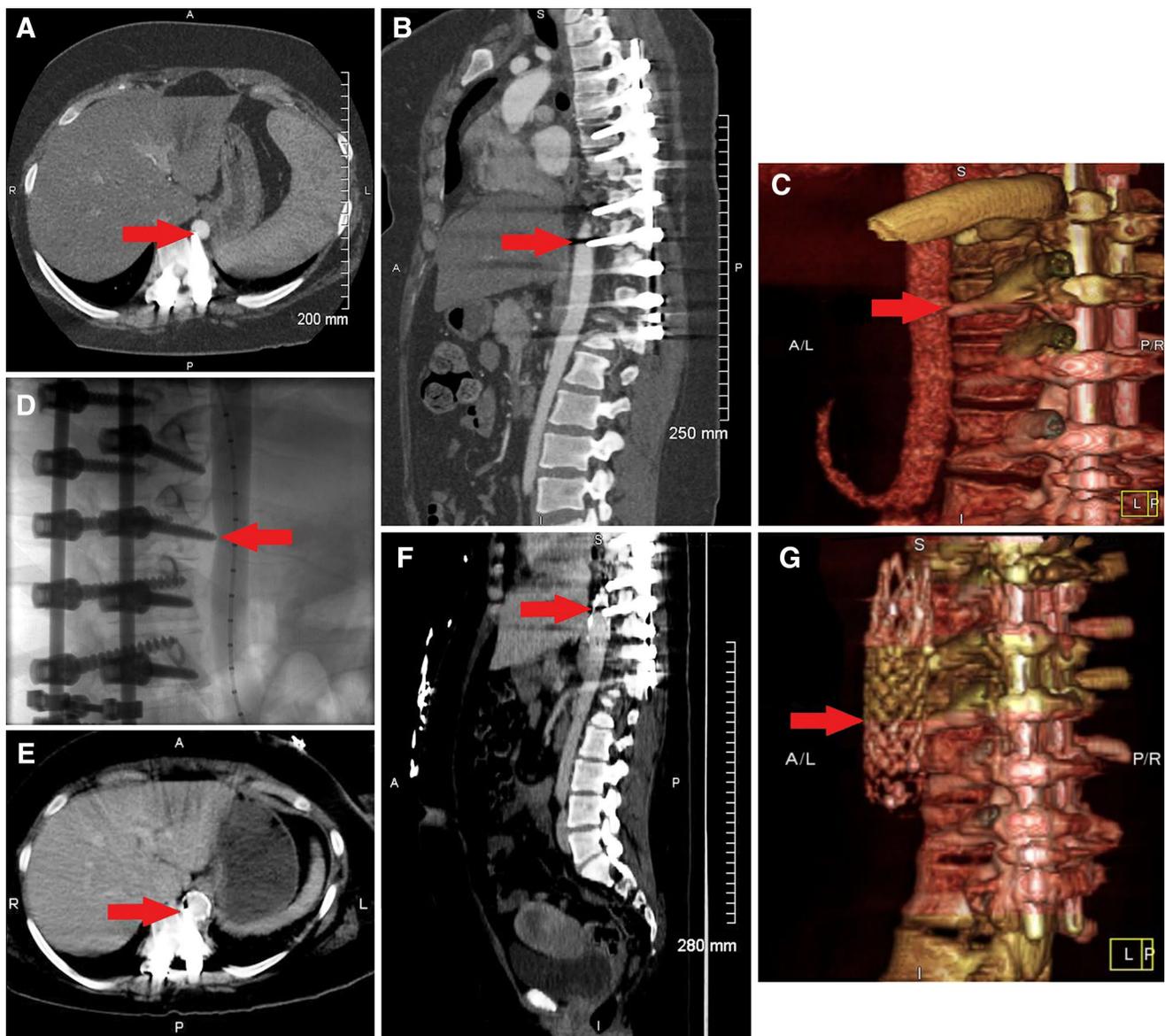
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**Fig. 1** **a** Transverse section of chest computed tomography (CT) at the T9 level shows a left-sided pedicle screw tip extending to the left of the vertebral body, with the incidental finding of its tip (red arrow) indenting the posterior aspect of the descending thoracic aorta (DTA). **b, c** Subsequent helical CT angiography of the descending thoracic aorta and 3-dimensional reconstruction images with the use of 75 mL of Isovue-370 given intravenously show extensive Harrington rods involving the entire thoracic spine with the redemonstration of the left pedicle screw at the T9 level extending beyond the vertebral margin and indenting the posterior medial aspect of the

descending thoracic aorta by 4 mm (red arrow) and the T8 pedicle screw abutting the posterior medial margin of the descending thoracic aorta (red arrow). **d** Periprocedure fluoroscopic imaging confirms the indentation (red arrow) prior to stent graft deployment. **e–g** One-year surveillance follow-up post thoracic endovascular aortic repair stent graft (red arrow) deployment, with helical and axial views of the CT angiogram and 3-dimensional reconstruction images of the chest, confirms aortic integrity without any endovascular leaks or dissection. *T8, T9* Thoracic vertebra pedicle screw

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### Compliance with ethical standards

**Conflict of interest** The authors report no conflicts of interest.