

**ENDOVASCULAR AORTIC STENT GRAFT REPAIR FOR BLUNT TRAUMATIC THORACIC AORTIC TRANSECTION**

Dear Sir,

The use of endovascular aortic stent graft repair (EVAR) to treat traumatic thoracic aortic transection (TTAT) in multiple injured patients is increasing worldwide. We report a successful case of EVAR of TTAT from the Middle East. A 44-year-old male pedestrian was hit by a car. When seen in the Emergency Department, he was fully conscious but had a haematoma of the left orbit. He was breathing spontaneously with good air entry in both lungs. His blood pressure was 100/60 mmHg and his pulse was 108/min. His abdomen was soft and non-tender. Both femoral pulses were easily felt. The patient had open comminuted fracture of the left tibia and fibula. Computed tomography (CT) showed transverse process fractures of C6–C7 vertebrae, bilateral rib fractures, and a descending thoracic aortic transection located 2 cm distal to the left subclavian artery origin (Fig. 1).



**Fig. 1** Sagittal CT image of the chest shows a traumatic thoracic aortic transection (arrowhead).



**Fig. 2** Follow-up sagittal CT image taken five days after stenting shows that there is no leakage.

EVAR of the aortic tear was done under general anaesthesia. Access to the right femoral artery was achieved using percutaneous technique. Two sutures were inserted in the artery wall through the percutaneous puncture using the Prostar device 10F (Abbott Vascular Inc, Redwood City, CA, USA). The access was carefully dilated up to 22F. The graft stent size was decided based on CT angiography. Percutaneous puncture of the left brachial artery was achieved and an angiocatheter was introduced through the brachial artery into the ascending aorta. This was used for contrast injection to mark the origin of the left subclavian artery. A TAG stent graft with a 22F sheath (GORE TAG Thoracic Endoprosthesis, WL Gore and Associates, Flagstaff, AZ, USA) was successfully deployed across the transected segment of the descending thoracic aorta. Debridement of the left leg wound and external fixation of the left tibia were performed after the stenting. The patient was ventilated for one night in the intensive care unit and transferred to the ward after two days. Postoperative recovery period was smooth. Follow-up CT after five days showed that the stent extended from the left subclavian artery down up to the diaphragm without evidence of leakage (Fig. 2). The patient did not develop any renal or neurological complications. On the sixth day, the patient had minimally invasive percutaneous plate fixation of the left tibia. He was discharged and was able to walk on the 18th postoperative day.

EVAR for TTAT is an evolving technology that offers a safe and effective alternative to standard surgical repair. A recent meta-analysis of 33 articles reporting 699 patients with TTAT has shown that mortality and neurological complications were significantly less in EVAR, compared with open repair. Mortality and paraplegia were 7.6% and 0%, respectively, with the EVAR, compared with 15.2% and 5.6%, respectively, with open repair.<sup>(1)</sup> The success rate of EVAR of TTAT in four recent clinical studies was up to 100%.<sup>(2-5)</sup> The use of this technique has replaced

open surgical repair with its significant operative mortality and paraplegia risk.<sup>(2-4)</sup> Primary difficulties encountered with delivery system length and size of the commercially-available endograft devices are obviated with the use of specifically-designed devices for thoracic aortic endografting.<sup>(3)</sup> The stent that we used was released from its midpoint, reducing the possibility of dislodgment. Furthermore, the whole procedure was done percutaneously without surgical cut-down. EVAR of TTAT, when anatomically feasible, has replaced open repair as the treatment of choice,<sup>(5)</sup> especially in polytrauma patients with extensive associated injuries.<sup>(2)</sup> The long-term durability of EVAR of TTAT remains unknown, but early and mid-term results appear promising.<sup>(4)</sup> To our knowledge, this is the first reported EVAR of TTAT in our region.

Yours sincerely,

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## REFERENCES

1. Tang GL, Tehrani HY, Usman A, et al. Reduced mortality, paraplegia, and stroke with stent graft repair of blunt aortic transections: A modern meta-analysis. *J Vasc Surg* 2008; 47:671-5.
2. Orford VP, Atkinson NR, Thomson K, et al. Blunt traumatic aortic transection: the endovascular experience. *Ann Thorac Surg* 2003; 75:106-11.
3. Wellons ED, Milner R, Solis M, Levitt A, Rosenthal D. Stent-graft repair of traumatic thoracic aortic disruptions. *J Vasc Surg* 2004; 40:1095-100.
4. Tehrani HY, Peterson BG, Katariya K, et al. Endovascular repair of thoracic aortic tears. *Ann Thorac Surg* 2006; 82:873-7.
5. McPhee JT, Asham EH, Rohrer MJ, et al. The midterm results of stent graft treatment of thoracic aortic injuries. *J Surg Res* 2007;