



Thoracic Aorta Aneurysm-Endovascular Aortic Repair

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Authors' contributions

This work was carried out in collaboration between all authors. Author PKA designed the study, wrote the protocol, and wrote the first draft of the manuscript. Author KS managed the literature searches, analyses of the study. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Endovascular aortic repair (EVAR) is the treatment of choice for patients with descending thoracic aortic aneurysm who are unfit for open surgery. We report a 50-year-old Asian woman who presented with a saccular symptomatic thoracic aortic aneurysm and underwent EVAR with a covered stent with prompt relief of symptoms and no residual complications at 1 year of follow up.

Keywords: Thoracic aorta aneurysm; saccular aneurysm; endovascular aortic repair.

1. CASE REPORT

A 50-year-old Asian woman, known hypertensive and diabetic for 8 years, presented to us with chronic backache for 6 months. On examination

her pulse rate was 80/min with blood pressure of 170/100 mmhg in all four limbs. Electrocardiogram (ECG) showed left ventricular hypertrophy (LVH) with strain. Echocardiogram showed concentric LVH with an aneurysm in

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descending aorta approximately measuring 50 x 50 mm. Computed tomography aortogram (Fig. 1) revealed a 40 x 55 x 48-mm saccular aneurysm with an neck of 25 mm on the posterior surface of the descending thoracic aorta, at 9th to 10th thoracic vertebral level. Aorta proximal and distal to the aneurysm measured 18 x 20 mm and celiac artery was 41mm below the neck of the aneurysm.

The patient was thin built and ill-nourished with a BMI of 14 kg/m². Coronary angiogram revealed normal epicardial coronaries and aortogram (Fig. 2) delineated the aneurysm well. Because of the localized nature of aneurysm and debilitated state of the patient she was taken up for endovascular aneurysm repair. Percutaneous access was obtained through a right femoral artery cut down and a 24F sheath (cordis) was introduced. Over a 0.035-lunderquist stiff wire a 26 x 26 x 100 mm Valiant stent-graft was deployed and aneurysm was completely excluded. The arteriotomy site on the right femoral artery was surgically repaired. Follow-up

angiography showed that the aneurysm was completely covered (Fig. 3), with no leakage of contrast medium into the aneurysmal sac. Patient was discharged after a week from EVAR. Follow-up CT angiography (Fig. 4) after 1 year showed a patent stent-graft, and complete exclusion of the thoracic aneurysm.

2. DISCUSSION

Thoracic aortic aneurysms are most often due to atherosclerosis [1]. Most patients are asymptomatic. Many first become aware of their aneurysms at the time of rupture. Symptoms result from compression of adjacent structures producing cough, dysphagia, hoarseness, and flank or back pain. In the past, chest radiography and angiography were used to establish the diagnosis. Recent technological advances, however, have made contrast-enhanced computed tomography and magnetic resonance angiography the dominant imaging methods for evaluating thoracic aneurysms [2].



Fig. 1. computed tomography shows a 4X5.5X4.8-cm thoracic aneurysm

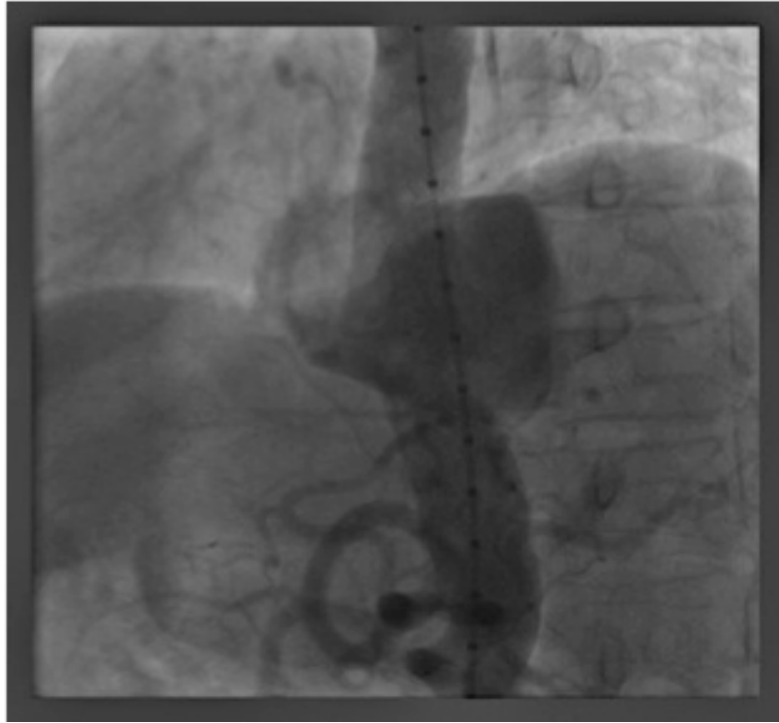


Fig. 2. Aortogram showing a saccular descending thoracic aorta aneurysm

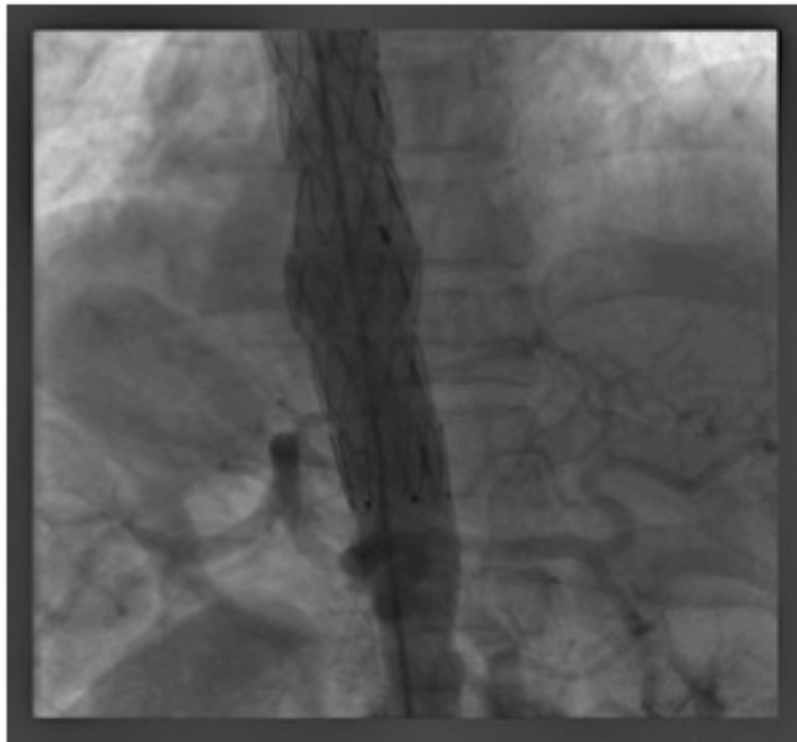


Fig. 3. Post procedure angiography shows exclusion of the aneurysm without leakage into the sac

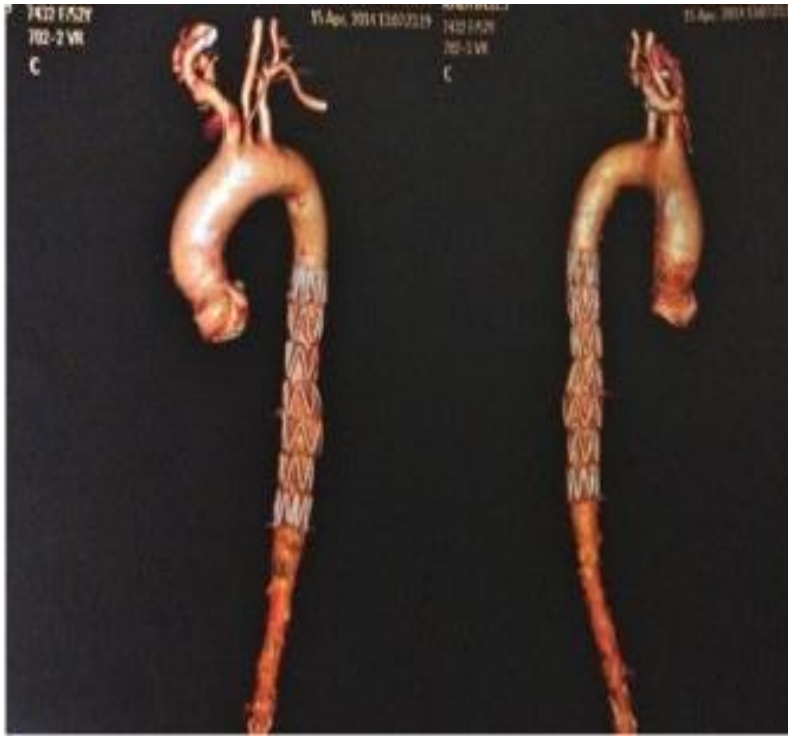


Fig. 4. Follow-up CT angiography at 1 year shows that the stent-graft is well opposed to the aortic wall and aneurysm is covered completely

Both techniques provide detailed anatomic information pertaining to planning EVAR or open surgical repair. Aneurysms of the descending thoracic aorta more than 50 mm have a risk of rupture of approximately 1% per year. Saccular aneurysms are more likely to rupture than are fusiform aneurysms. The mortality rate after rupture is high; fewer than 5% of patients are alive 1 year later [3]. EVAR has been developed to treat thoracic aortic aneurysm [4,5]. It can be performed percutaneously without general anesthesia. Prerequisites [6] include a sufficient proximal and distal landing zone of at least 2 cm, an access vessel of at least 8 mm in diameter, a standard 24 French delivery device. Although these prerequisites have been suggested, with present generation stent grafts and delivery sheaths these prerequisites are not an absolute requirement. The limitation of EVAR is that mid-term results with 1st-generation devices have been poor. Lifelong graft surveillance with computed tomography is required for thoracic aorta aneurysm. Moreover, despite its less invasive nature, EVAR is still associated with a risk of paralysis, subsequent aneurysmal rupture, and even procedure-related death [7]. When compared to open surgery EVAR reduces early mortality and paraplegia, postoperative renal

insufficiency, re-exploration (bleeding), transfusions, may reduce postoperative stroke and myocardial infarction. This case was presented because a high index of suspicion is required to diagnose aneurysms especially in middle aged female patients in whom symptoms of chronic back ache are often ignored. It also emphasizes that endovascular therapy is a simple less invasive procedure to treat such lesions.

3. CONCLUSION

EVAR is an effective less invasive alternative to surgery for thoracic aorta aneurysms in patients who have multiple comorbidities. Studies have demonstrated fewer early complications with the minimally-invasive approach. Some studies have also observed a lower mortality rate with EVAR [8,9]. Long term results are lacking. After a few years the survival after repair is similar with EVAR or open surgery. This is because of endograft durability. Newer, improved technology may reduce the need for repeat procedures. If so, the results of EVAR may improve to the point where long-term survival benefit becomes evident.

CONSENT

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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