



Pull-down maneuver of stent graft for abdominal aortic aneurysm with accessory renal arteries

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A 78-year-old man admitted to our hospital because of Stanford B type acute thoracic aortic dissection. CT imaging showed abdominal aortic aneurysm (AAA) and bilateral common iliac arterial aneurysms (Fig. 1a, b). He also had bilateral accessory renal arteries (Fig. 1c). The length from the lower accessory renal artery to the terminal aorta was 63 mm. Although his anatomical structure was not suitable for endovascular aortic aneurysm repair (EVAR), we thought it possible to accomplish EVAR, because the length of neck below the lower renal artery was 24 mm and the neck was not so bending, which was enough for sealing neck with stent graft. We performed embolization of internal iliac arteries and EVAR 6 months later. We selected Gore[®] Excluder[®] AAA endoprosthesis system, whose length from the top of the stent graft to the end of the contralateral gate is 80 mm. When we deployed the stent graft below the lower accessory renal artery as the conventional method, the contralateral gate would locate in the ipsilateral common iliac artery. On the other hand, if we push up the contralateral gate above the bifurcation, the lower renal arteries would be sacrificed (Fig. 1d). Therefore, we tried to pull down

the stent graft once deployed above the renal arteries. We inflated the balloon within the contralateral limb of the stent graft, and constrained the proximal trunk (Fig. 1e). Then, we simultaneously pulled down the main body and the inflated balloon catheter till the top of the stent graft was positioned below the lower renal artery. Final angiography showed the intact lower renal arteries and no endoleak into the aneurysm (Fig. 1f).

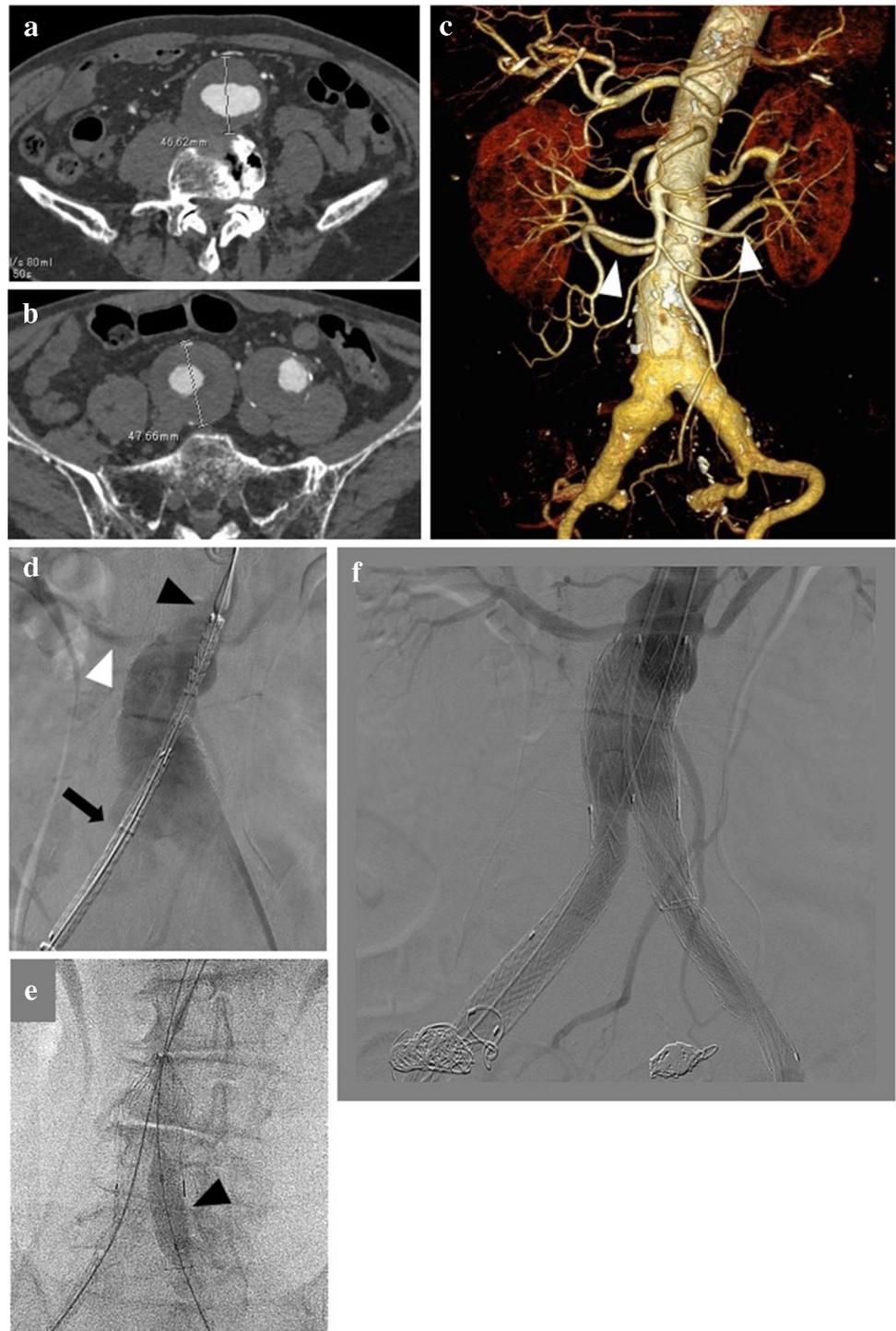
Accessory renal artery is an anatomical variation found in 28–30% of the general population [1]. The presence of an accessory renal artery arising from the seal zone or aneurysm requires coverage by the stent graft or embolization during EVAR, and it may cause renal function deterioration. Renal infarction occurred only in patients with accessory renal arteries, and 14% of eGFR decreased in 1 week after EVAR, while no renal infarction was observed in patients without accessory renal arteries [2].

When the length of neck below the lower renal artery was enough and the neck was not so bending, we can expect good result of EVAR with pull-down maneuver for patients with accessory renal arteries.

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Fig. 1 **a** Contrast-enhanced CT image showed AAA of 47 mm in diameter. **b** Right common iliac arterial aneurysm was 48 mm in diameter. **c** 3D-CT image showed bilateral accessory renal arteries (empty triangle). **d** Top of the stent graft (filled triangle) was above the lower accessory renal artery (empty triangle) and the contralateral gate (arrow) was on the bifurcation. **e** 14 mm balloon (filled triangle) was inflated within the contralateral leg. **f** Final angiography showed a little enhancement out of the top of the stent graft, but no endoleak to AAA and bilateral common iliac arterial aneurysms was detected



References

- Özkan U, Oğuzkurt L, Tercan F, Kızılkılıç O, Koç Z, Koca N. Renal artery origins and variations: angiographic evaluation of 855 consecutive patients. *Diagn Interv Radiol*. 2006;12:183–6.
- Sadeghi-Azandaryani M, Zimmermann H, Korten I, Klose A, Scheiermann P, Treitl M, et al. Altered renal functions in patients with occlusion of an accessory renal artery after endovascular stenting of an infrarenal aneurysm. *J Vasc Surg*. 2017;65:635–42.