Retrograde Type B Aortic Dissection as a Complication of Standard Endovascular Aortic Repair

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Endovascular repair (EVAR) for abdominal aortic aneurysms (AAAs) is becoming the standard of practice in most vascular centers, even if some concerns remain about the occurrence of early and long-term failure and reintervention. A rare but potential catastrophic event is represented by retrograde type B aortic dissection (RTBAD). We report 2 cases of RTBAD after 425 standard EVARs performed in our institution. Both patients were treated for AAA without perioperative complication, and in both the patients, the presence of a preexisting disease of the thoracic aortic wall (ulcerated plaque in 1 case and aortic ectasia in the other) may have played an important role in the rapid evolution toward an early onset of the dissection. Only few cases of type B dissection after EVAR have been reported in literature, and the etiology of this complication remains uncertain. For the first time, our experience highlights the possible etiologic role of preexisting lesions of the thoracic aorta. In these cases, the only possible strategy may be to carefully study the entire aorta before an EVAR procedure, eventually switching the indication to an open surgical repair or carrying out a more aggressive management, treating the defects of the thoracic aorta.

The endovascular repair (EVAR) of infrarenal abdominal aortic aneurysms (AAAs) has become an established practice in patients with a favorable anatomy[1] and a feasible technique even in case of challenging anatomies.[2] The main problem related to EVAR remains the occurrences of early and long-term failure requiring reintervention.[3] A rare but potentially catastrophic event is represented by retrograde type B aortic dissection (RTBAD).

In literature, few cases of acute aortic dissection are reported after EVAR procedure. We report 2 cases of acute RTBAD after standard EVAR performed at our center.

CASE 1

A 68-year-old man was admitted to the emergency room of our hospital for abdominal pain radiating in the lumbar region associated with hypertensive crisis (arterial blood pressure, 230/120 mm Hg). In his medical history, there was no risk factor except for smoking habits. Blood tests were normal, except mild increase in serum creatinine (1.8 mg/dL). The patient underwent a computed tomography angiography (CTA) documenting the presence of an ulcerated plaque in the descending thoracic aorta below the left subclavian artery, associated with AAA with a maximum diameter of 70 mm. Proximal aortic neck measured 26 mm in diameter and 6 mm in length. Kinking of both iliac axis and right common iliac artery ectasia (maximum diameter: 24 mm) were also present.

The patient was therefore referred to emergency EVAR with bifurcated aortic stent graft (Endurant

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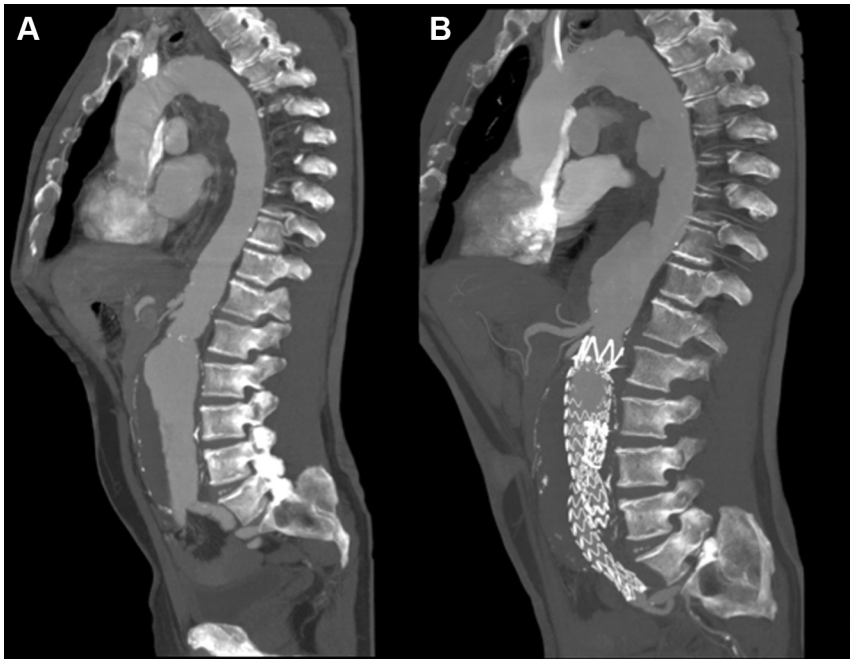

Fig. 1. Case 1, Multiplanar reconstruction showing the aorta before (**A**) and after (**B**) EVAR.

II 32-16-145 mm + 16-13-93 mm + 16-16-156 mm; Medtronic Cardiovascular, Santa Rosa, CA). The iliac branches were placed using the crossed-limb configuration[4] to accommodate the endograft to the iliac anatomy. The completion angiography showed the good positioning of the endoprosthesis in the absence of endoleaks or other complications.

Before hospital discharge, a new CTA showed good positioning of the endoprosthesis, without any endoleak, and no new alteration at the level of the thoracic aorta. The patient was discharged on postoperative day 8 in good general condition, with complete pain relief and normalization of blood pressure after adequate antihypertensive therapy.

One month after surgery, the patient complained about the sudden onset of chest pain and new increase in arterial blood pressure (blood pressure 160/80 mm Hg). A new CTA (Fig. 1) showed the presence of RTBAD that extended from the origin of the left subclavian artery to the distal third of the descending thoracic aorta, associated with aneurysmal dilatation (maximum diameter, 40 mm). Patient was newly referred to surgery, undergoing a left carotid-subclavian bypass followed by endovascular exclusion of the thoracic aneurysm (Zenith Alpha 36-32-209 mm; Cook Medical Inc, Bloomington, IN). Postoperative course was uneventful and the patient was discharged in postoperative day 5 in good general condition. At 3-month follow-up, a new CTA showed good positioning of both the endografts, without endoleak or residual dissection.

CASE 2

A 51-year-old man underwent scheduled CTA for chronic pancreatitis, showing a nonruptured AAA (maximum diameter, 63 mm), an aneurysm (maximum diameter, 22 mm) of the right internal iliac artery (IIA), and an ectasia (maximum diameter, 40 mm) of the aorta just above the celiac trunk. Infrarenal aortic neck measured 27 mm in diameter and 22 mm in length. The patient was referred to our unit for AAA treatment. He reported no cardiovascular risk factor, and preoperative assessment was normal. After the patient refused an open surgical repair, a standard EVAR procedure (Excluder C3 31-14-130 mm + 16-20-200 mm + 16-18-100 mm; W.L. Gore & Associates, Flagstaff, AZ) was performed to exclude the infrarenal aneurysm covering the ostium of the right IIA. Postoperative course was uneventful, and the patient was discharged on postoperative day 3. The 1-month follow-up CTA showed the good positioning of the stent graft and the complete exclusion of the aneurysmal sac and of the IIA aneurysm.