SCIENTIFIC LETTER

FIRST CASE OF BRANCHED THORACIC ENDOGRAFT TO THE SUBCLAVIAN ARTERY IN COLOMBIA

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ABSTRACT

This case report describes an 83-year-old female patient with a history of recovered heart failure and multiple comorbidities, presenting a high risk of sudden cardiac death. She was referred to after experiencing a cardiogenic syncope, which led to the placement of a bicameral pacemaker. Additionally, a fusiform aneurysm was detected in the descending aorta, near the left subclavian artery. Treatment was performed via endovascular intervention using a second-generation device with a branched stent in the left subclavian artery, yielding favorable good outcomes.

Keywords: *descending aortic aneurysm, subclavian artery, endovascular intervention.*

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INTRODUCTION

Endovascular surgery has become the first-line treatment for aortic diseases across all its sections, including both the thoracic and abdominal regions, since the early cases[1,2]. Aortic arch lesions have historically represented a significant challenge[3], and continue to pose new challenges. Hybrid surgery, which combines a less aggressive endovascular treatment of the aortic arch and bypasses of the supra-aortic trunks, partially or totally, is currently a viable alternative. In this context, branched stent techniques offer new therapeutic possibilities.

CASE REPORT

This is the case of an 83-year-old female patient referred for cardiogenic syncope. Her medical history includes chronic hypertension, type II diabetes mellitus, non-oliguric chronic kidney disease, permanent atrial fibrillation, heart failure with reduced ventricular function, myocardial revascularization surgery, and percutaneous coronary intervention[4]. She was referred from another facility due to syncope and a thoracic aortic aneurysm; she was admitted after experiencing cardiogenic syncope, which required the implantation of a bicameral pacemaker at the site of origin due to the risk of sudden cardiac death. A fusiform aneurysm was found in the descending aorta, with angiographic imaging (*Figure 1*) showing aneurysmal dilation of the thoracic aorta in the proximal segment near the left subclavian artery, measuring 54 mm, and a distal aneurysm, proximal to the superior mesenteric artery, measuring 45 mm (*Figures 2 and 3*). Treatment was decided upon involving endovascular repair of the thoracic aorta using a branched stent, followed by a review by the electrophysiology team due to a 200 ml hematoma at the pacemaker insertion site. This led to the decision to explant the device and perform a new contralateral implantation.

FIGURE 1. Descending aortic aneurysm near the left subclavian artery.

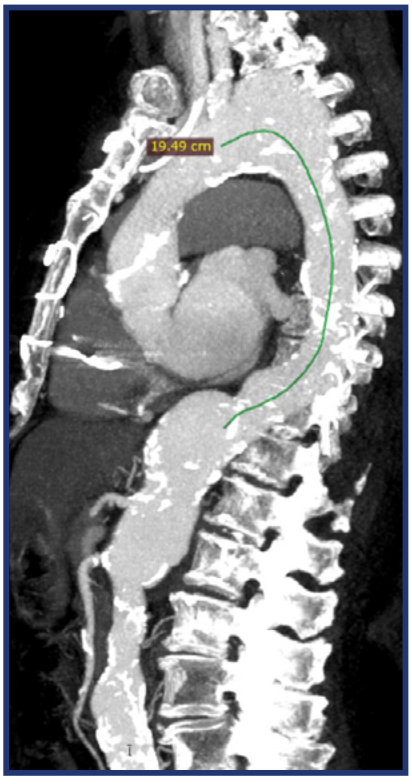

FIGURE 2. Descending aortic aneurysm near the superior mesenteric artery.

FIGURE 3. Angiotomographic image showing distal and proximal involvement.

RESULTS

Emergency surgery was performed, it was decided not to perform a cervical debranching[5], and to perform endovascular repair treatment of the thoracic aneurysm with a branched stent, given the critical conditions of the patient, her longevity and to minimize the high risks of morbidity and mortality; Castor™ stent with subclavian branch, made of braided polyester and nitinol, placed in zone 2, was used. The bicameral pacemaker was repositioned, and the hematoma was drained, with a sample taken for culture; the result was negative. The pacemaker generator was placed in the retropectoral space (reimplantation), and the wound was closed. The right common femoral artery was then dissected and repaired, with placement of a 6F introducer. The left humeral artery was punctured

with an 8F introducer, and the left femoral artery with a 6F introducer. In the thoracic aortogram, an aneurysm was observed in sector 4 of the thoracic aorta, with extension towards the splanchnic plane and severe atheromatosis in the iliac arteries and abdominal aorta (*Figures 4 and 5*). The subclavian branch was modeled with a Medtronic™ 9 × 20 balloon (*Figure 6*). Postoperative control showed adequate exclusion of the aneurysm in sector 4, without endoleaks, without displacements, and with patency in the subclavian artery (*Figure 7*). In the abdominal aortogram, adequate patency of the splanchnic vessels was observed, without dissections (*Figure 3*). A right femoral arteriorraphy was performed with extensive endarterectomy and closure of the arteriotomy with Prolene 6/0™. Hemostasis of the access sites was achieved using fibrillar SurgiSeal™, and the access wounds were subsequently closed. During the procedure, the patient presented elevated blood pressure, which required infusion of nitroglycerin at 0.5 mcg/kg/min. Subsequently, she was transferred to the ICU for intensive management and hemodynamic monitoring. The patient made a satisfactory recovery, without neurological symptoms, and was discharged four days after surgery.

DISCUSSION

Endovascular treatment with state-of-the-art devices, such as branched stents, combined with extra-anatomic cervical revascularization of supraoptic vessels, is a valuable therapeutic option, especially for elderly patients with multiple comorbidities[6]. This strategy reduces the high risks of stroke, renal failure, paraplegia[7,8], and death[4], improving survival and offering a definitive and less invasive solution for complex patients. However, potential long-term complications should also be considered, such as stent collapse with risk of sudden death, the need for rescue surgeries or poor sealing at the anchor site[9,10].

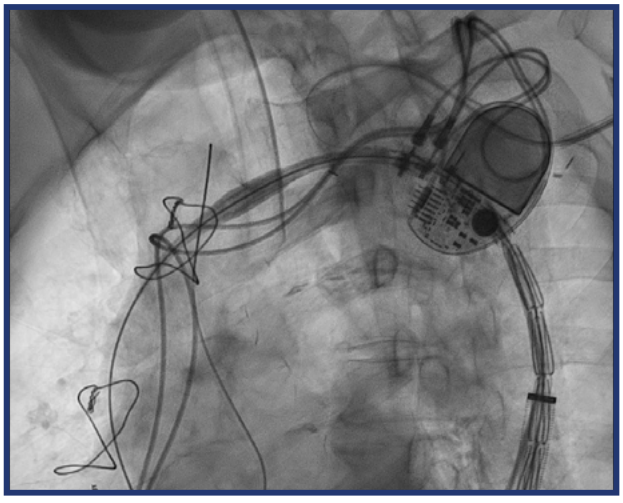

FIGURE 4. Device advancement in the descending aorta.

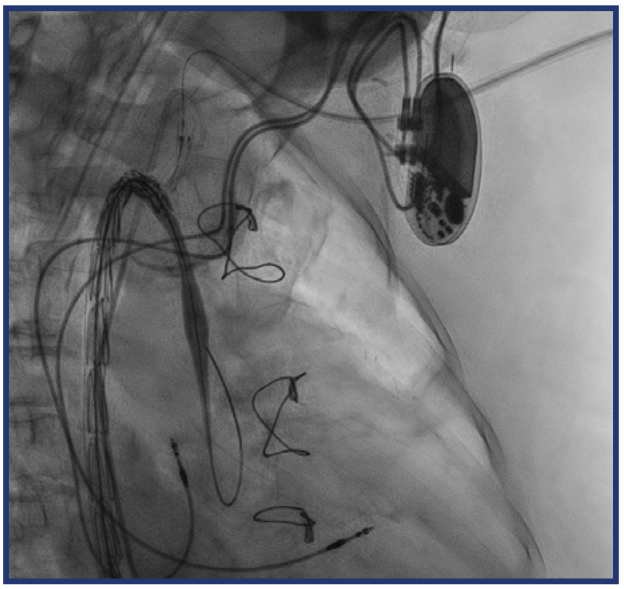

FIGURE 5. Lateral view.

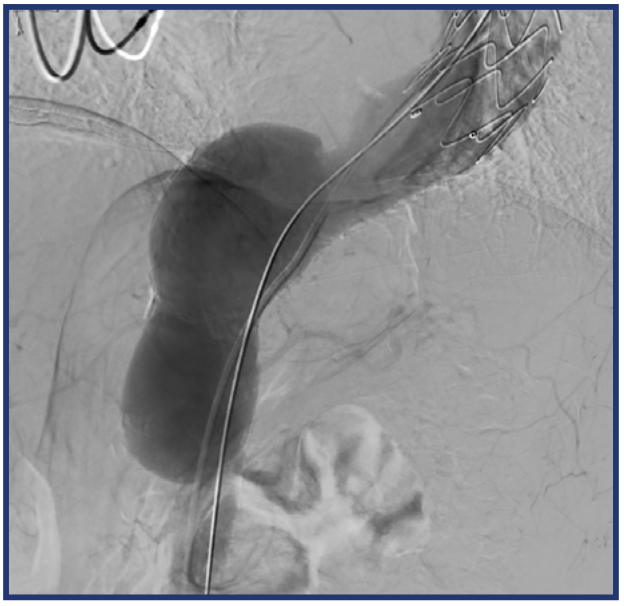

FIGURE 6. Deployment of the endoprosthesis.

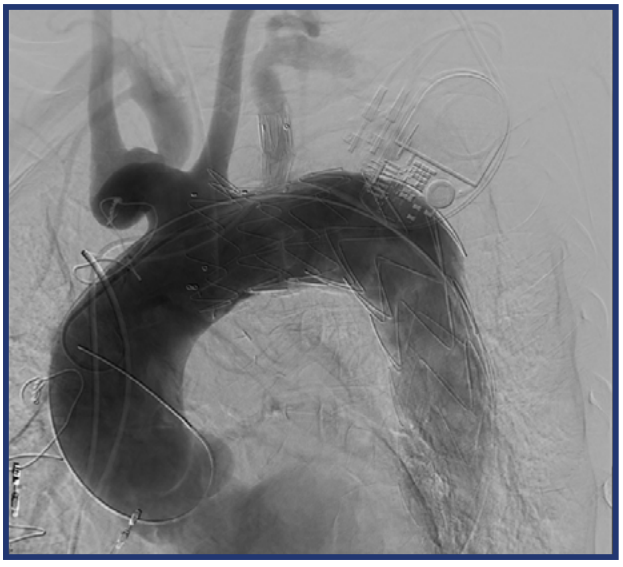

FIGURE 7. Total exclusion of the aneurysm.

CONCLUSION

The latest generation of thoracic endografts, especially those with branched devices, has proven to be a valuable tool in the treatment of aneurysmal diseases. Their applicability, both in the short and long term, represents an effective therapeutic option, particularly in the population with high morbidity and mortality.

Declarations

The authors declare no conflict of interest.

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