

## Scientific letters

**Endovascular Treatment of a Complicated Acute Type B Aortic Dissection in a Patient With Aortic Coarctation****Tratamiento endovascular de disección aórtica aguda tipo B en paciente con coartación aórtica posductal****To the Editor,**

The combination of aortic coarctation and dissection is a rare entity, traditionally treated surgically. However, there are still important knowledge gaps. We report the first case in the literature of a patient with postductal aortic coarctation combined with complicated acute type B aortic dissection in which endovascular management was chosen as the first-line treatment, even in the absence of contraindications to surgery.

A 25-year-old man, with no relevant past medical history, presented to the emergency room complaining of transfixing chest pain. A significant difference between blood pressure in the upper and lower extremities (160/90 mmHg in the right upper extremity and 110/70 mmHg in right lower extremity) was noticed and the intensity of the femoral pulses was diminished. The pulse was regular at 85 beats /min, oxygen saturation was 95%, and a soft diastolic murmur in the second intercostal space was heard. An electrocardiogram showed no abnormalities and chest radiography revealed mediastinum widening.

An urgent thoracic computed tomography angiography exhibited an aortic arch coarctation that originated distal to the origin of the left subclavian artery, with an 8-mm minimal diameter and type B aortic dissection immediately after coarctation, which extended to the vertebral level D11, about 4 cm above the celiac trunk, with a maximum dilation of 42 mm. All the aortic branches remained patent. An echocardiogram confirmed the findings and showed a transcoarctation pressure gradient of 39 mmHg, as well as mild aortic regurgitation and preserved left ventricular systolic function.

Given the presence of an uncomplicated acute type B aortic dissection, medical management was provided through antihypertensive drugs and morphine. After 48 hours of intensive medical treatment, uninterrupted chest pain and refractory arterial hypertension persisted. A new computed tomography angiography showed an increase of aortic dilation to 65 mm (Figure 1). Given the unfavorable clinical course, we decided to perform emergent surgery.

The correction of aortic dissection was prioritized and therefore endovascular treatment was chosen to minimize the risk of ischemic complications. Left percutaneous access and right groin dissection were performed. A transesophageal echocardiogram was performed to locate the true lumen and a Terumo hydrophilic standard guide was placed on the right side. The use of an MP 5-F catheter allowed its passage through the coarctation area. The procedure was repeated on the left side with subsequent placement of a 5-F pigtail catheter.

Angiography was performed and 2 thoracic endoprosthesis Relay Plus of 28 × 28 × 155 mm and 34 × 34 × 100 mm were placed overlapping, covering the left subclavian artery up to 3 cm above the celiac trunk. Subsequently, the coarctation area was dilated with a Reliant balloon, with a satisfactory result (Figure 2A), lowering the pressure gradient to 19 mmHg. It was decided not to prevent type II endoleaks by embolisation of

collateral circulation between the intercostal branches and left subclavian artery because of the high risk of spinal cord ischemia.

The postoperative course was satisfactory and the patient remains asymptomatic to date. Computed tomography angiography was performed at 1 (Figure 2B) and 6 months (Figure 2C and 2D) of follow-up and a reduction in the diameter of the aneurysm was noted. A type II endoleak from a right intercostal branch, drained through 2 left intercostal arteries, was observed in both tests. We decided to opt for conservative management.

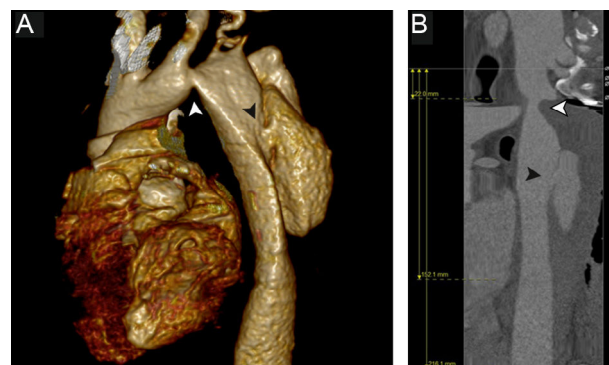
Aortic coarctation represents 5% to 7% of congenital heart disease and usually presents as an isolated narrowing of the juxtaductal aorta. Current clinical practice guidelines recommend stenting as the first-choice treatment in patients with native aortic coarctation and appropriate anatomy.<sup>1</sup> In this regard, the routine use of computed tomography scans has significantly improved treatment decisions in these patients.<sup>2</sup>

Aortic dissection in the context of an aortic coarctation is a rare entity, with Stanford type A dissection being more common, since elevated blood pressure before the coarctation and progressive aortic dilation are postulated as being the causes of dissection. This combination should be treated surgically. Nevertheless, co-occurrence with type B dissection is even less frequently reported, probably due to low intra-aortic pressure distally to the coarctation.

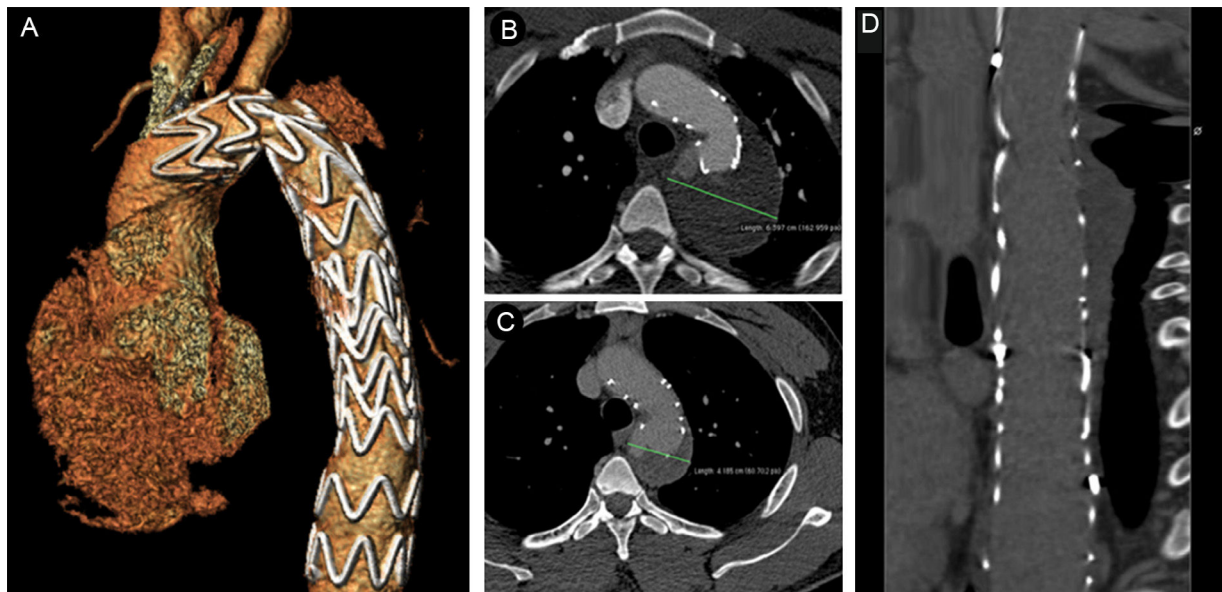
It is well established that the treatment of uncomplicated type B dissection should be eminently conservative except when complications occur. In these cases, thoracic endovascular aortic repair is preferable if there is feasible vascular anatomy. Open surgery is associated with more procedure-related complications, such as spinal cord ischemia, stroke, mesenteric ischemia, or acute renal failure.<sup>1,3</sup>

Currently, the joint management of these 2 entities is not well established. We reviewed the existing literature and found few case reports of patients with type B aortic dissection complicating a coarctation; most of these patients were treated surgically,<sup>4</sup> but with the risks inherent to open surgical repair. However, the successful completion of a percutaneous approach has been reported in a single patient who persistently refused surgery.<sup>5</sup>

Our case poses the problem of the optimal management of type B aortic dissection complicating a pre-existing coarctation and suggests that the percutaneous approach is a valid option, even as first-line therapy.



**Figure 1.** Computed tomography scan before surgery, showing aortic coarctation distal to the left subclavian artery (white arrows) and aortic dissection (black arrows). A: Computed tomography scan 3-dimensional reconstruction. B: Center-lumen line reconstruction.



**Figure 2.** Postprocedural and follow-up computed tomography scan images. A: 3-Dimensional reconstruction after surgery. B: Cross-section at 1 month, showing stable aortic dilation (63 mm). C: Cross-section at 6 months, showing decreased diameter to 41 mm. D: Center-lumen line at 6 months.

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## ST-elevation Myocardial Infarction in Anomalous Origin of Right Coronary Artery From the Left Sinus of Valsalva and Interarterial Course



### Infarto con elevación del ST en pacientes con origen anómalo de coronaria derecha en el seno de Valsalva izquierdo y trayecto interarterial

#### To the Editor,

An anomalous origin of the right coronary artery (RCA) in the left sinus of Valsalva is an anatomic variant associated with ischemia, infarction, and sudden cardiac death in young patients.<sup>1</sup> The prevalence of this anomaly ranges from 0.026% to 0.92% in analyzed series, typically invasive and noninvasive coronary angiography registries. This type of coronary anomaly is related to an increased presence of anatomical characteristics associated with worse prognosis, such as an interarterial or intramural course, smaller

ostial diameter, and acute takeoff angle.<sup>2</sup> However, there have been few cases of acute coronary syndrome related to an anomalous RCA. We present 2 such patients treated in our center (Table).

The first patient was a 40-year-old man who had been resuscitated after out-of-hospital sudden cardiac arrest due to ventricular fibrillation. He received basic and advanced resuscitation for 1 hour and had inferior ST-elevation on electrocardiography. Coronary angiography failed to identify obstructive lesions in the left coronary system. The RCA was not visualized, even after multiple contrast agent injections into the right sinus, ventriculography, and aortography. The origin of the artery was finally located in the left sinus and imaging revealed complete proximal thrombotic obstruction (Figure 1A). Implantation of 2 bare-metal stents achieved a good angiographic result. After therapeutic hypothermia, the patient showed no neurological sequelae. Computed tomography (CT) showed an interarterial course (Figure 1B and Figure 1C). At discharge, the patient was enrolled in a cardiac rehabilitation program and underwent repeat