

Native atretic coarctation of the aorta in a 37-year-old hypertensive woman, treated with a low-profile covered stent

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We report on a 37-year-old woman with essential systemic hypertension. An MRI was performed because of weak femoral pulses, depicting a severe almost atretic coarctation of the aorta (Fig. 1). Angiography of the proximal distal thoracic aorta was simultaneously performed (Fig. 2a). The transverse arch was narrow (16 mm), as was the diameter of the terminal aortic arch distal to the left subclavian artery (10 mm). Distal of the coarctation the diameter of the descending aorta was 11 mm. A trajectory of 2 mm in length seemed atretic. The

atretic segment could be crossed in an antegrade fashion with a straight 0,014 in. coronary wire and balloon pre-dilatation was performed with a 5 mm coronary balloon. Thereafter, a multi-purpose catheter could be advanced retrogradely across the coarctation segment. A 9 French

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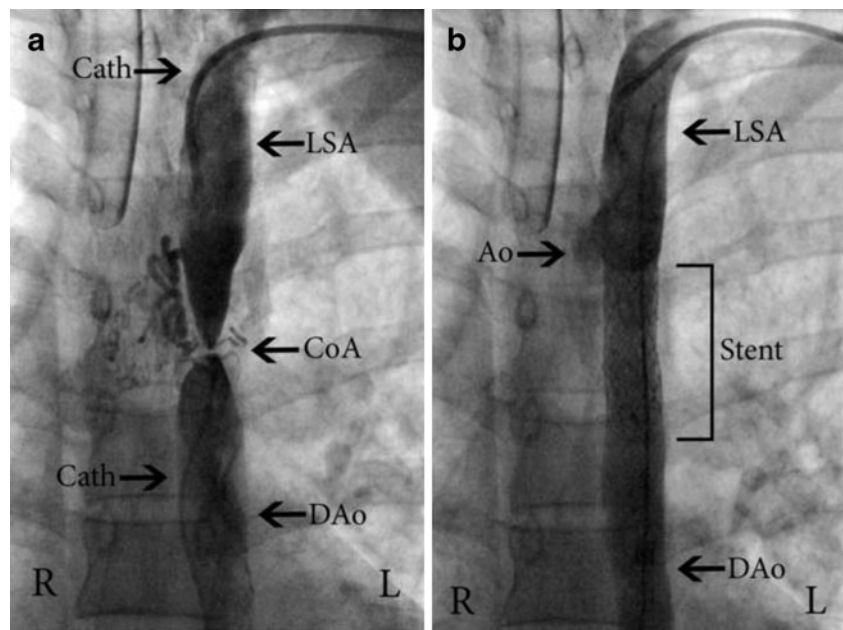
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Fig. 1 MRI imaging of the left ventricle (LV), ascending aorta (AAo). The left subclavian artery (LSA) is dilated and the descending aorta (DAo) is hypoplastic. The coarctation imposes as atresia. There are numerous collaterals. RV: right ventricle

Fig. 2 **a** Simultaneous angiography of the proximal and distal descending aorta; anterior projection. Atretic coarctation (CoA). Some small collaterals can be seen right of the coarctation. Abbreviations: Cath: catheter, DAo: descending aorta, LSA: left subclavian artery. L/R: left and right side of patient. **b** After stent-implantation (stent). Ao: transverse aorta. Left subclavian artery (LSA)



Mullins sheath (Cook) was advanced to the transverse aortic arch. A 41 mm long Advanta V12 premounted covered stent (Atrium, Hudson, USA) on a 12 mm high pressure balloon was implanted. Consecutive angiography revealed complete expansion of the stent up to 12 mm without residual stenosis, and no aneurysm formation (Fig. 2b).

In conclusion, treatment with placement of a low-profile covered stent, using a simultaneous radial and femoral approach and pre-dilatation, delivered an excellent result without complications and a short hospital stay. The patient's blood pressure returned to normal and her antihypertensive medication could be stopped within 3 weeks after stent implantation. We emphasise that in so-called 'unexplained' systemic hypertension, especially in young adults, coarctation of the aorta has to be excluded [1, 2]. When coarctation is confirmed primary stenting is the first choice therapeutic option [3–5].

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References

1. Ing FF, Starc TJ, Griffiths SP, Gersony WM. Early diagnosis of coarctation of the aorta in children: a continuing dilemma. *Pediatrics*. 1996;98:378–82.
2. Walhout RJ, Suttrop MJ, Mackaij GJ, Ernst JM, Plokker HW. Long-term outcome after balloon angioplasty of coarctation of the aorta in adolescents and adults: is aneurysm formation an issue? *Catheter Cardiovasc Interv*. 2001;73:549–56.
3. Harrison DA, McLaughlin PR, Lazzam C, Connelly M, Benson LN. Endovascular stents in the management of coarctation of the aorta in the adolescent and adult: one year follow up. *Heart*. 2001;85:561–6.
4. Bruckheimer E, Birk E, Santiago R, Dagan T, Esteves C, Pedra CA. Coarctation of the aorta treated with the Advanta V12 large diameter stent: acute results. *Catheter Cardiovasc Interv*. 2010;75:402–6.
5. Moltzer E, Roos-Hesselink JW, Yap SC, et al. Endovascular stenting for aortic (re)coarctation in adults. *Neth Heart J*. 2010;18:430–6.