Transcatheter treatment of coarctation of the aorta with aortic lumen atresia and kissing balloon between the aorta and the left subclavian artery

Tratamento transcater de coarctação com atresia do lúmen aórtico e *kissing balloon* entre aorta e artéria subclávia esquerda

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Figure 1. Percutaneous treatment of coarctation of the aorta with atresia of the aortic lumen: coarctation crossed with a 0.014" guide, stent implantation, and final kissing balloon between the aorta and the left subclavian artery.

Coarctation of the aorta (CoA) accounts for 5% to 7% of all congenital heart diseases, with an estimated incidence of approximately three cases per 10 thousand live births.¹ CoA treatment is indicated when the coarctation gradient is equal to or greater than 20mmHg.^{1,2} Without treatment, the prognosis is poor, with 75% mortality at 43 years of age.¹ The use of stents for endovascular treatment of CoA was first reported in 1991, expanding the possibilities of transcatheter treatment. Retrospective analyses show a 97.9% rate of success with the use of stents.¹

Percutaneous treatment of CoA associated with aortic lumen atresia (ALA) is a technical challenge that requires specific materials, and is associated with an increased risk of complications. Farjat Pasos et al. described a technique for traversing the CoA with the assistance of an electrocautery, an accessible option when it is not possible to cross the lesion with 0.014" guides dedicated to the treatment of chronic occlusions using the traditional technique.³ In these cases, the implantation of covered stents is indicated. The narrowing of the aorta is generally distant from the origin of the left subclavian artery (LSCA), allowing the stent implantation to be performed without major difficulties. When the stenosis is close to the LSCA, the final kissing balloon (FKB) technique or a double guide for stent implantation can be used, ensuring patency of the branch.⁴

We describe the transcatheter treatment of a CoA with recanalized ALA using a 0.014" guide dedicated to the treatment of chronic occlusions and FKB to optimize the apposition of the covered stent and ensure a good flow through the LSCA.

A 28-year-old female patient with CoA diagnosed during investigation of resistant arterial hypertension. The computed tomography angiography of the aorta showed CoA associated with ALA. The patient was admitted to the cath lab, placed under general anesthesia, and underwent puncture of the right radial (5F introducer), the right femoral (12F), and the left femoral (6F) arteries. Full heparinization was performed with unfractionated heparin (100IU/kg). The CoA was crossed with a 0.014" HI-TORQUE PROGRESS 120 (Abbott®) guide wire by retrograde route. A covered 8Z 45mm CP Stent™ (NuMED®) manually mounted on an 18x50mm Z-MED II balloon (NuMED®) was implanted just below the LSCA origin. Through the lumen of the stent, the guide was positioned in the LSCA via left femoral access. FKB was performed with a 12mmx40mm and a 9mmx60mm POWERFLEX® Pro balloons (Cordis®)

(Figure 1). The angiographic result was good, with a final systolic gradient of 4mmHg and no complications.

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None.

DECLARATION OF CONFLICTS OF INTEREST

The authors declare there are no conflicts of interest.

CONTRIBUTION OF AUTHORS

Conception and design of the study: LSCL and LCG; data collection: LSCL and LCG; data interpretation: LSCL and LCG; text writing: LSCL and LCG; approval of the final version to be published: LSCL, LEKST and LCG.

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