Letter to the Editor

Guideliner use for the percutaneous treatment of right coronary artery arising from the left circumflex (L-type single coronary artery)

Sergio García-Blas, Ernesto Valero, David Escribano, Clara Bonanad, Juan Sanchis, Julio Núñez *

Servicio de Cardiología, Hospital Clínico Universitario, Universitat de València, Valencia, Spain

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We present the case of an 87 year-old male admitted to our institution for syncope. During index admission a severe aortic stenosis was diagnosed and a coronary angiogram before a transcatheter aortic valve replacement was scheduled. Angiography showed an uncommon coronary artery anomaly consistent in a single left coronary artery with an anomalous origin of right coronary artery (RCA) from distal left circumflex artery (Cx) (Fig. 1). A severe stenosis was observed in distal Cx (arrow in Fig. 1), which therefore jeopardize coronary flow of the entire RCA including important posterolateral branches and posterior descending coronary artery. Percutaneous coronary intervention (PCI) was then planned using a XB3.5 6F (Cordis, USA) guide catheter and Sion Blue guidewire (Asahi Intecc). An attempt to deploy a bare metal stent (BMS) failed due to distal localization and calcification of the lesion that precluded proper stent navigation, in spite of the use of an extra back-up guide catheter and high pressure predilatation. Then, a guide extension catheter (Guideliner®) was advanced deeply into Cx allowing an adequate positioning and successful deployment of the BMS (Fig. 2).

Single left coronary artery with anomalous origin of right coronary artery arising as a continuation of distal left circumflex artery is an infrequent coronary anomaly and has been seldom reported [1]. In this anomaly, a single coronary artery from left sinus of Valsalva divides to left anterior descendant coronary artery (LAD) and Cx, and distal Cx continues its course beyond the crux to at the interventricular groove and follows the course of a normal RCA to the base of the heart. In a recent case report and review of this issue, Pourafkari et al. described 25 cases reported in the literature, mainly diagnosed as an asymptomatic incidental finding [2]. In spite of anomalous origin, RCA runs along its usual path, this may explain the benign course and negative ischemic work up in the absence of coronary lesions. However, the presence of significant atherosclerotic lesions may compromise coronary perfusion of a vast amount of myocardium, due to the length of this Cx-RCA artery.

Interventionists face technical challenges when dealing with anomalous coronary arteries, due to several technical factors related to abnormal origin and course of the artery. Moreover, the low frequency and unique characteristics of these anomalies make an essential individualized approach, including the careful selection of guide catheter and use of alternative techniques. In this specific setting, especially challenging is the percutaneous treatment of distal coronary lesions which entails difficulties to the advance of balloons or stents. In this case, a guide extension catheter allows successful stent deployment by enhancing backup and increasing pushing strength. The Guideliner catheter extension device (Vascular Solutions Inc.) consists of a monorail system, which extends to the distal end of the guide catheter (‘mother–child’ fashion), with a length of 25 cm, a thickness 1 Fr less than the guide catheter and a design that minimizes trauma on the artery wall. The technique begins with engaging the guiding catheter (mother) and positioning the guidewire. Next, the Guideliner is inserted into the guide catheter through the hemostatic valve and advanced until it reached the coronary artery. This technique permitted deep intubation into the artery, providing great coaxiality and enhanced support. In our experience, this type of catheter improves the success of PCI of complex coronary lesions [3].

There are 2 previous reports of Guideliner use in the percutaneous treatment of coronary anomalies. One of them was an anomalous origin of RCA, arising from the left coronary cusp superior to the left main artery. In this case, conventional guides failed to achieve a selective cannulation of RCA ostium, even trying to use the wire down the coronary as a rail to coaxially engage the RCA. In that case, Guideliner catheter could engage coaxially the ostium of the RCA and allowed stent deployment [4]. In the second case, a Guideliner catheter was successfully employed to the percutaneous treatment of a R-type single coronary artery. In this case, the guide catheter reached the left main ostium, but it disengaged in every attempt to advance balloons or stent. Guideliner catheter was placed in the distal left main for additional support and avoiding guide disengagement [5]. In the present case, the main challenge stemmed on the distal localization of stenosis and tortuosity of the coronary artery [6]. To the best of our knowledge,
this is the first report highlighting the utility of a catheter extension system for the percutaneous treatment of distal severe stenosis in a single coronary artery.

Conflict of interest

The authors report no relationships that could be construed as a conflict of interest.

References


